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Strategic Use of Social Media in COVID-19 Pandemic. Pandemic Management by Sri Lankan Leaders and Health Organisations Using the CERC Model

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Full research paper

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Abstract

The COVID-19 pandemic has impacted all countries around the world, including Sri Lanka. One of the most important resources that Sri Lanka has used to counter COVID-19 is social media. The aim of this research is to investigate the role of social media and the leaders and health-focused organisations during the crisis, and community reactions across various stages of the COVID-19 pandemic. This study employed the quantitative approach to examine how Sri Lanka leaders and leading health-focused organisations utilised Facebook and LinkedIn, during the COVID-19 pandemic to communicate with their public. The results of the research confirmed the adaptability of the Crisis and Emergency Risk Communication Model (CERC) to improve communication during a crisis by leaders and health-focused organisations. This study uncovered key themes, key messaging strategies that are used by leadership and health-focused organisations across different phases of the pandemic and their effectiveness, as indicated by the public reactions.

Keywords Facebook, LinkedIn, Social Media, Sri Lanka, COVID-19, Risks and Crisis Communication (CERC) model.

1 Introduction

The Sri Lanka WHO representative said that “Sri Lanka, fortunately, had been one of the few countries with even modest means that has been able to control the epidemic more effectively than the even more resourced countries”. Additionally, in South Asia, Sri Lanka has one of the lowest rates of recorded COVID-19 infections and fatalities per 100,000 persons (Department of Foreign Affairs and Trade, 2022). Although COVID-19 has been successfully contained in Sri Lanka, health, economic, and post-conflict related concerns have been made worse as a result of declines in important industries and remittances (Department of Foreign Affairs and Trade 2022).

The novel coronavirus (SARS-CoV2) has become a global pandemic within a concise period and has spread across all continents, including Sri Lanka. Despite the seriousness of the pandemic and the observed panic surrounding COVID-19 globally, Sri Lanka has been able to control the COVID-19 pandemic more effectively than developed and resourced countries such as the United States, Italy and Spain (WHO Sri Lanka 2020). With a land area of 25,000 square miles and a population of 21.5 million, Sri Lanka had only 2,841 confirmed cases of the COVID-19, with eleven deaths by August 2020 (Health Promotion Bureau 2020). This was indeed a whole of society and a government approach (WHO Sri Lanka 2020). This paper focuses on crisis management and leadership by the Sri Lankan government and other related institutions to prevent and contain the COVID-19 pandemic. The Sri Lankan president closely worked with the armed forces, Ministry of Health and Indigenous Medical Services, the WHO country office for Sri Lanka and other key institutions such as the Ministry of Foreign Relations in order to monitor the pandemic situation and limited the spread of COVID-19 via the community (World Health Organization Sri Lanka 2020).

Effective communication with the public about the associated risks and protective factors concerning the crises is an important part of the successful prevention and containment of any health-related crises (Guidry et al. 2017). One of the most important resources that Sri Lanka has used to communicate and engage with the public is social media (Kaluarachchi et al. 2020). Sri Lankan leaders such as President Gotabaya Rajapaksa, government chief medical officer and other government agencies, such as the Health Promotion Bureau, Minister of Health and Department of Government Information, used social media, especially Facebook and LinkedIn, to engage and voice their views, suggestions, and recommendations related to the COVID-19 pandemic. Community engagement had been fundamental in all of these efforts because without community involvement, and it is difficult to control the virus's spread (World Health Organization 2020). Social media’s quick and affordable communication and large audience presented an opportunity to disseminate timely messages, including warnings, to diverse segments of the population and enhanced community engagement. Therefore, the study provides a good opportunity to determine how Sri Lankan leaders and health-focused organisations used Facebook and LinkedIn to engage with the public during the COVID-19 pandemic.

In terms of the paper, a key overarching research question is “How did Sri Lankan leaders and health-focused organisations used Facebook and LinkedIn strategically to share information and best practices that mitigate the COVID-19 pandemic?” To answer this main research question, we focused on two sub-questions.

RSQ1: How did political and government leaders and health-focused organisations in Sri Lankan employed social media to communicate about the COVID-19 pandemic with its constituents?

RSQ2: How did the general public in Sri Lankan reciprocate to social media messages about the COVID-19 pandemic?

The paper is arranged in the following manner. First, we discussed the theoretical background to this research. This is followed by our research methodology, data analysis and findings, discussion, and conclusions.

2 Use of Social Media in Risk and Crisis Communication

According to Veil et al. (2008), "Communication is the primary process for establishing relationships and acquiring information necessary to make choices and adjustments" and is a key area of emergency response. Further, Seeger and Reynolds (2007) defined risk communication as "the intentional effort to inform the public about risks and persuade individuals to modify their behaviour to reduce risk." Risk communication focuses on encouraging people to take necessary actions to limit risks, while crisis communication focuses on answering urgent information needs by the public (Veil et al. 2008).

Risk and crisis communication are necessary to improve the public's awareness, preparedness and response to a crisis because it raises the awareness of citizens and their ability to take the correct measures during a crisis (Wendling et al. 2013). Television, radio, newspapers, social media networks and other web-based channels can be used as crisis communication engagement methods. However, the Internet-based methods have speeded up the communication compared to traditional methods because it has the ability to broadcast real-time information (Tennakoon et al. 2018; Wendling et al. 2013).

Social media plays an important role in crisis communication during infectious disease outbreaks due to its transparent nature, a large audience as well as low costs associated with using social media (Lwin et al. 2018). Social media allow health authorities to share real-time information to the public as the crisis evolves and which also provide equal access to information among users (Wendling et al. 2013). Social media networks are collaborative and participatory, which allow fruitful online discussions which can improve situational awareness. People can convey their opinions by commenting on the posts; this means health authorities can gather valuable information from a large audience about the health crisis in real-time (Lwin et al. 2018; Wendling et al. 2013). Secondly, the decentralised nature of social media facilitates the quick circulation of information among users. Thirdly, social media networks are popular and accessible by the population. Therefore, emergency services can reach a wide audience without geographical and time boundaries when sending or receiving information (Wendling et al. 2013). Government organisations also use social media to develop mutually beneficial connections with the public during pre-crisis periods (Lamberti 2016). This can be used as a monitoring tool that allows public health authorities and emergency management teams to respond to individuals' needs and rumours shared online (Nagahawatta et al. 2019; Tennakoon and Gramoli 2022; Thomas et al. 2016).

Nevertheless, social media platforms present new challenges for policymakers, such as spreading rumours and misinformation as well as very susceptible to issues. In order to build effective risk and crisis management systems, both public and private sector users should build integrity and keep trust when it comes to crisis communications (Reynolds and Quinn 2008; Wendling et al. 2013) and social media must carefully be managed. Specially involvement of leadership and communication clarity can be used to reduce the possibility of confusion, distortion, and fake news during a crisis.

Recent large-scale disasters such as the Zika outbreak, Haiti earthquake, Ebola outbreak and Boston Bombings have revealed the value of social media tools such as Twitter, Facebook to share information communication (Lwin et al. 2018; Thomas et al. 2016; Wendling et al. 2013). Researchers also have shown that "using social media accurately and in a timely fashion during times of uncertainty can alleviate fears and concerns" (Nagahawatta and Warren, 2020; Wendling et al. 2013). The Lwin et al. (2018) study presented that Facebook was used by health authorities in Singapore to communicate with the public during the Zika outbreak successfully. Reynolds and Quinn (2008) investigated the effective social media communication methods using the Crisis and emergency risk communication model (CERC) model during an Influenza Pandemic. Schroeder et al. (2013) examined the drivers of social media use during crises and Berg, Palenchar, and Veil (2013) studied how social media was used to share information during 2009 H1N1 crisis.

We have seen that numerous researchers have conducted various studies related to the COVID-19 pandemic within a short period. These researchers have investigated various aspects of the pandemic, but few researchers have investigated social media's involvement related to the COVID-19 pandemic. Karisani and Karisani (2020) researched social media posts related to COVID-19 using machine learning techniques to better understand the impact of the COVID-19 pandemic in China. Another German study analyses the factual basis of fears such as fake news and societal confusion in computational content analysis of alternative news media's output on Facebook during the early stages of the COVID-19 pandemic (Boberg et al. 2020). Kadam and Atre (2020) researched the negative impact of social media panic during the COVID-19 pandemic in India. Even though the current literature revealed that social media is an important complement to traditional media in the context of risks and crisis communication, a key question is how officials can best use social media to engage with the public and increase retransmission of warning messages is still a question (Thomas et al. 2016). In this research, we are going to investigate the use of social media by leaders and health-focused organisations in Sri Lanka, looking at various stages of the COVID-19 pandemic to curtail the virus and user's behaviours related to the pandemic in the social media domain.

In this research, we used the "crisis and emergency risk communication model (CERC)" by Reynolds, Hunter-Galdo, and Sokler (2002) as a theoretical framework to explain how Sri Lankan leaders and health-focused authorities communicated with the public during the three stages of COVID-19 pandemic defined as pre, outbreak and post-pandemic. Because "health emergencies" are different from other emergencies (e.g., floods), we do not have much lead time. Sri Lankan leaders and other health

organisations worked into a predefined plan because the COVID-19 pandemic gave them ample time to prepare and manage the pandemic. Researchers Ballard-Reisch et al., (2007, p. 218) also showed that "Effective communication before, during, and after public health, emergencies is the foundation for appropriate response". Many researchers have used CERC as a framework to investigate risk and crisis communication during public health crises (Lwin et al. 2018; Reynolds and Quinn 2008; Veil et al. 2008). Also, previous studies have shown that an infectious disease pandemic may typically follow the CERC model more than other types of emergencies (Reynolds and Seeger 2005). Therefore, the CERC model was selected as an appropriate model to use for this research study described in this paper.

CERC was initially developed as a tool for public health professionals to expand their communication responsibilities during crises (Veil et al. 2008). This five-stage CERC model has been developed by integrating many risks and crisis communication principles such as theory-driven, research-driven, and practice-driven within a general unifying framework (Veil et al. 2008). The CERC model defines that most crises will expand in predictable and systematic ways, particularly the following stages: "risk, toward outbreak, then clean-up and recovery on into evaluation" (Reynolds and Seeger 2005, p. 51). The CERC model shows that effective crisis communication must commence long before a crisis erupts and continues after the current threat has lessened (Reynolds and Seeger 2005).

The pre-crises phase is the initial stage of the CERC model; these include communication and education campaigns (risk messages, warnings, preparations) targeted to both the public and the response community to facilitate monitoring, understanding and change their behaviours. The second stage is the initial stage when the crisis is evolving. In this stage, authorities should provide rapid communication to the general public and impact groups seeking to reduce uncertainty by providing timely updates of the crisis as it evolves and improves public understandings of self-efficacy and personal response activities. Authorities also need to reassure the public about interventions that have been put in place to improve the crisis. Under the model's maintenance stage, authorities should provide ongoing uncertainty reduction, self-efficacy, and reassurance. Under the model's resolution stage, authorities should provide public communication and campaigns directed toward the general public and affected groups seeking to update their understanding about ongoing resolutions, discussions about cause and new risks. The final stage of the model is the evaluation phase, here the communication directed toward agencies and the response community for evaluating the adequacy of responses and communication effectiveness and reaching consensus on lesson learned and a new understanding of risks (Reynolds and Seeger 2005).

3 Methodology

This study employed a content analysis methodology to examine how Sri Lanka leaders and leading health-focused organisations utilised social media, namely Facebook and LinkedIn, during the COVID-19 pandemic to communicate with the public and how the community reacts to them. A total of 175 posts, including 111 Facebook posts and 64 LinkedIn posts shared by the Sri Lankan President Gotabaya Rajapaksa's Facebook page (1,045,232 people follow this) and LinkedIn page (28,899 followers), Health Promotion Bureau Facebook page (500,422 people follow this), Government Medical Officers' Association Facebook page (110,783 people follow this) and the Department of Government Information Facebook page (107,040 people follow this) were selected using simple random sampling technique for the analysis. Facebook and LinkedIn pages were selected because these are the major social media platforms for the discourse of the COVID-19 pandemic as more than 75.54% of the Sri Lankan population is using Facebook and LinkedIn regularly (Statcounter Global Stats 2020). During the study, public responses to the original government and health organisations posts, such as likes, shares, and comments, were also collected and analysed to understand the public engagement and effectiveness of the government communication.

The authors carried out the data collection and analysis during three stages of the COVID-19 pandemic from February till the end of June 2020 within Sri Lanka. Although the original CERC model has five stages, this study investigation period was categorised into three phases due to the short period used for our analysis, and those stages are pre-outbreak outbreak and post-outbreak. The pre-outbreak phase was operationalised from 1 of February till the second week of March 2020, and the outbreak phase was from the second week of March until 1 of May 2020 and, the post-outbreak phase was from the first week of May until the end of June 2020, and there has been incorporated into the CERC phases of pre-outbreak, outbreak and post-outbreak. The three phases were categorised as above because the first locally transmitted COVID-19 case of a Sri Lankan national was reported on March 11th, 2020. Drawing upon the CERC model, this study identified six themes, as shown in Table 1, to select Facebook and LinkedIn posts for the sample. Furthermore, we divided each theme into several subcategories according to the CERC model. Each post was coded for the timeframe of the post, the theme and

subcategory of the post and if a post was liked and the number of likes, whether a post received comments and the number of comments, whether the post shared in another website or social media sites and number of shares.

4 Data Analysis and Findings

The authors manually collected Facebook and LinkedIn posts published by Sri Lankan leaders and other health-focused organisations. For the analysis, six major themes were adapted from the CERC model: 1) risk messages: posts related to disease mechanisms and symptoms; 2) warnings: posts contain information related to risk factors and dangers associated with the crisis; 3) preparations: posts highlighting responders and recommendations to prevent the crisis; 4) uncertainty reduction: posts comprising information related to case reports, local geographical information, and other information sources; 5) efficacy: posts containing personal prevention measures and statements on common responsibility for crisis prevention; and, 6) reassurance: posts that remove uncertainty or concerns of public with indications of government interventions, and expressed thanks and regards to the people who involved (Reynolds and Seeger 2005). The themes we captured from the leadership and health organisations posts, further categorised into 14 topics as shown in table 1.

Theme	Sub-topics	Description
Risk Messages	Symptoms	Posts related to symptoms associated with COVID-19.
	Disease mechanisms	Statements or posts related to disease mechanisms.
Warnings	Danger	Statement that highlights the danger of COVID-19 in Sri Lanka.
	Risk factors	Posts which explain risk factors or risk groups associated with COVID-19.
Preparations	Responders	Statements from organisations or persons who will be responsible for the COVID-19 situation in Sri Lanka.
	Recommendations	Advises and suggestions on taking actions to prevent COVID-19.
Uncertainty Reduction	Local locality	Report on local geographic information of COVID-19.
	Case report	Reports and updates of case numbers and clusters.
	Information resources	Websites or other information resources where people can learn more about COVID-19.
Efficacy	Common responsibility	Statement of common responsibility for the public and other stakeholders involved with the emergency.
	Personal prevention measures	Individual prevention actions individuals can take to prevent COVID-19.
Reassurance	Calming	Statements that remove uncertainty or concerns of the COVID-19 outbreak.
	Thanking and regards	Expression of thanking and regards for the people who helped to contain the virus.
	Government interventions	Government interventions employed to manage the COVID-19 outbreak.

Table 1: Social Media themes and topic clusters

Under the risk message's theme, the authors mainly focused on the topics related to symptoms and disease mechanisms associated with COVID-19. Under the warnings theme, the authors included posts highlighting the danger of COVID-19 and posts that explain risk factors or risk groups associated with the COVID-19 pandemic in Sri Lanka. Statements and responders from government organisations related to the COVID-19 situation and recommendations on preventing COVID-19 have included under the theme of the preparation. The uncertainty reduction theme has been used to discuss the local locality report, such as local geographic information of COVID-19, reports and updates of local case numbers and clusters, as well as other information resources where people can learn more about the COVID-19 situation. The Efficacy theme is another important theme that has been used to discuss the personal prevention measures individuals can take to prevent COVID-19 and common responsibility for the public and other stakeholders involved with the emergency. The reassurance theme discusses government interventions, statements that remove uncertainty or concerns or fake news related to the

COVID-19 pandemic and expression of thanking and regards for the people who helped contain the virus.

The COVID-19 posts were thematically analysed to provide a reference point in relation to the leaders and health-focused organisations communication of the disease. The results of the post thematic analysis are shown in Table 2.

Themes and topics	Total N=175***	Pre-crisis N=29	Outbreak N=86	Post-crisis N=60	P	X^2
Risk Messages						
Symptoms	4.0% (7)	13.8% (4)	3.5% (3)	0.0% (0)	0.009	9.41**
Disease mechanisms	8.6% (15)	10.3% (3)	9.3% (8)	6.7% (4)	0.813	0.41
Warnings						
Danger	7.4% (13)	10.3% (3)	9.3% (8)	3.3% (2)	0.351	2.09
Risk factors	10.3% (18)	13.8% (4)	8.1% (7)	11.7% (7)	0.656	0.84
Preparations						
Responders	18.3% (32)	6.9% (2)	26.7% (23)	11.7% (7)	0.035	6.72*
Recommendations	9.1% (16)	17.2% (5)	3.5% (3)	13.3% (8)	0.015	8.37*
Uncertainty Reduction						
Local locality	2.9% (5)	6.9% (2)	2.3% (2)	1.7% (1)	0.361	2.04
Case report	2.3% (4)	0.0% (0)	1.2% (1)	5.0% (3)	0.215	3.07
Information resources	2.9% (5)	0.0% (0)	2.3% (2)	5.0% (3)	0.273	2.60
Efficacy						
Common responsibility	10.3% (18)	13.8% (4)	15.1% (13)	1.7% (1)	0.046	6.17*
Personal prevention measures	6.9% (12)	0.0% (0)	4.7% (4)	13.3% (8)	0.044	6.27*
Reassurance						
Calming	6.3% (11)	6.9% (2)	4.7% (4)	8.3% (5)	0.333	2.20
Thanking and regards	6.3% (11)	0.0% (0)	3.5% (3)	13.3% (8)	0.022	7.63*
Government interventions	4.6% (8)	0.0% (0)	5.8% (5)	5.0% (3)	0.365	2.02

***64 LinkedIn and 111 Facebook posts have been taken for the analysis.

Percentages indicate the percentage of themed posts by all posts in a crisis phase. Statistics indicate whether percentages significantly vary across phases for each of the themes. * $p < 0.05$; ** $p < 0.01$.

Table 2: Themes and post categories by crisis phases.

Overall, the extraction of totalled 175 COVID-19 related posts, with 64 LinkedIn and 111 Facebook posts. They produced a total of 240324 likes, 63881 shares, and 16511 comments. Results of the leaders and health-focused organisations posts are first analysed, and then public reactions to these original posts were presented. A total of 175 posts were analysed, and about half of the posts shared during the outbreak phase. Analysis revealed that 27.4% of all posts contained information for preparations, and 17.7% contained warnings information. 17.2% of all posts contained efficacy information, followed by 17% of all posts contained reassuring information and 12.6% on risk messages. Moreover, 8% of the posts contained information relating to the uncertainty reduction of COVID-19. While 8.6 of posts mentioned the disease mechanisms for risk message posts, only 4% provided information on disease symptoms. Within the warning theme, 10.3% of posts mentioned risks associated with COVID-19 and 7.4% of posts directly emphasised the danger of the disease spread. For messages about preparedness, 18.3% of posts mentioned first responders, and 9.1% of posts provided recommendations to reduce harm. Within the uncertainty reduction theme, posts that provided resources reported cases and mentioned specific areas were all prevalent topics, accounting for 8.1% of all posts. For the efficacy theme, 17.2% of posts emphasised public collaboration to prevent COVID-19. Approximately all posts (10%) mentioned specific actions for common responsibility from the disease. The majority of reassurance themed posts tried to assure the public that the government has conducted or will promote

efforts to monitor and improve the situation (6.3%), with all posts mentioning specific government interventions (4.6%).

To understand how government and health authorities strategically use Facebook and LinkedIn for COVID-19 communication, cross-tabulation analyses were conducted by examining relationships between post themes by crisis phases (Table 2). Posts about disease mechanisms, warnings, uncertainty reduction, calming and government interventions share the same pattern across phases. Some posts accounted for a high proportion of posts in the pre-crisis (symptoms, 13.8%; risk factors, 13.8%; recommendations, 17.2%) and the outbreak phase (responders, 26.7%; common responsibility, 15.1%; disease mechanisms, 9.3%), but there was a significant drop in the post phase symptoms and common responsibility ($x2 = 9.41$, $p = 0.009$; $x2 = 6.17$, $p = 0.046$, respectively). Conversely, the frequency of thanking and regards posts was the lowest in the initial phase, as compared with the outbreak (3.5%) and the post phase (13.3%) phase, though the differences were only marginally significant ($x2 = 7.63$, $p = 0.022$). However, case report posts were most frequent in the post phase, the differences were not significant among phases ($x2 = 3.07$, $p = 0.215$). The local locality posts dropped in frequency across the three phases, from 6.9% in the pre-crisis phase to 1.7% in the post phase ($x2 = 2.04$, $p = 0.361$). The percentage of personal prevention measures posts peak in the post phase (13.3%) compared with the pre-crisis phase and the outbreak phase ($x2 = 6.27$, $p = 0.044$). For subcategory themes, posts about recommendations of the disease were mentioned the most in the pre-crisis phase and significantly fell in the later outbreak ($x2 = 8.37$, $p = 0.015$).

5 Discussion

This research specifically focuses on the risk and crisis communication by Sri Lankan leaders and health-focused organisations during the COVID-19 pandemic. The research describes how leadership and health-focused organisations used Facebook and LinkedIn as a tool for strategic outbreak communication, offer lessons learned, and community perceptions. It uncovered key themes, key messaging strategies that are used by leadership and health-focused organisations across different phases of the pandemic and their effectiveness, as indicated by the public reactions. According to the study findings, Sri Lankan leaders and health-focused organisations used Facebook and LinkedIn to correspond to the different phases of the CERC model, which allowed leaders and health organisations to provide strategic crisis communication during the COVID-19 pandemic. In the pre-crisis phase the health focus organisations tend to post symptoms (13.8%), disease mechanisms (10.3%), potential dangers of the virus (10.3%), risk factors (13.8%) and recommendation (17.2%) related massages mostly compared with other topics. The 'Risk Messages', 'Warnings' and 'Preparations' themes were prominent themes during the pre-crisis.

When the outbreak began on 11 March 2020, most of the posts published related to the government responders (26.7%) topic during the outbreak phase. These government responders by the Sri Lankan leadership mostly helped the public to reduce uncertainty during the pandemic and restore or maintain calm. Besides, health-focused organisations published posts related to the local case reports and warnings about the new clusters where they live to stop the further spread, injury and deaths other than communicating messages to the public asking them to take particular personal prevention measures to prevent COVID-19. Another interesting finding is that the spread of fake news during the pandemic and leaders and health-related organisations tried to address fake news and rumours as they evolve to reduce uncertain panicking situations. Further, these organisations explicitly published about common responsibility (15.1%) for the public and other stakeholders involved with the emergency. These Facebook and LinkedIn posts related to the common responsibility might lead the way for its citizens to understand their common responsibilities and act accordingly.

The post-crisis phase mostly discussed further recommendations and personal prevention measures to prevent the virus's possible second wave. Other than that, mostly the Sri Lankan leaders used Facebook and LinkedIn posts to convey their thanking and regard to the people who helped to contain the virus. The leaders and health-focused organisations should consider the following objectives when communicating in the crisis, 1) prevent more illness, injury, or death, 2) restore or maintain calm; 3) and create confidence in the operational response (Reynolds 2006). The study findings likely matched the following objectives of effective communication during a crisis. Overall, we observed that leaders and various health focus organisations in Sri Lanka had used Facebook and LinkedIn strategically during the various stages of the COVID-19 pandemic.

The public response analysis demonstrated that different topics of messages received different levels of responses from the public, according to the value and relevance to the virus outbreak. The public mostly liked all types of posts during the pandemic phase, and average likes decreased as the outbreak unfolded.

During the outbreak, the public mostly liked posts that encourage efficacy. The analysis of public responses also revealed that the topics related to 'Personal prevention measures' and 'Common responsibility' had been leading topics in terms of both posts and public interactions. Public comments were for all posts, the same pattern of like and share, the public commented the most during the outbreak phase. Other than that, the public expressed their concerns and requests via comments to the posts. That allows public health authorities and emergency management teams to respond to an individual's needs and rumours as the outbreak continued. The public mostly shared posts in the outbreak, while the number of shared messages decreased in the post-crisis phase. By examining the topics of the messages, the public shared the largest number of warning messages, followed by preparations. This also empowered the public to find the necessary information and engaging with others during the COVID-19 outbreak. The study findings not only demonstrate how the CERC model can be used to explain the use of social media by leaders and health-focused organisations in Sri Lanka, during the COVID-19 pandemic to curtail the virus but also helped to revise the CERC model in relation to the use of social media in a crisis in developing country perspective (Table 3).

Stages	Communication strategies or good practices
Pre-crisis	**Risk messages, warnings, preparations, efficacy, uncertainty reduction** o Communication and education campaigns targeted to both the public and the response community to facilitate: o Establish or use existing official social media channels to provide information to the public * o Educate the public about symptoms, disease mechanisms and risk factors o Specific warning messages regarding emerging risks and some imminent threat o Development of consensual recommendations by experts and first responders o Alliances and cooperation with agencies, organisations, and groups to o Provide related healthcare awareness and education * o Reduction of crisis-related uncertainty and fake news/rumours as they emerge * o Encourage public common responsibility
Out break	**Ongoing risk messages, warnings, preparations, efficacy**; **uncertainty reduction and reassurance** o Ongoing communication and education campaigns o Improve/create public understanding of new risks and new understandings of risk as well as new risk avoidance behaviours and response procedures o Designated crisis/agency spokespersons and formal channels and methods of communication in social media* o Government responders related to emergency management and government interventions * o Specific understanding of emergency management and medical community responses o General and broad-based understanding of the crisis circumstances, consequences and anticipated outcomes based on available information o Facilitate broad-based, honest, and open discussion and resolution of issues regarding cause, blame, responsibility, and adequacy of response* o Monitor and address real-time concerns/requests from the affected and public * o Ongoing reduction of crisis-related uncertainty & fake news/rumours as they emerge * o Empathy, reassurance, and reduction in emotional turmoil * o Encourage public common responsibility*
Post-crisis	**Discussions of the adequacy of response; consensus about lessons learned, ongoing educations and thanking and regards.** o Evaluate and assess responses, including communication effectiveness o The document, formalise, and communicate lessons learned o Determine specific actions to improve crisis communication and crisis response capability. o Express regards about cooperation for everyone who helped to contain the virus o Ongoing related healthcare educations to prevent possible second wave * o Inform & persuade about ongoing clean-up, remediation, recovery, & rebuilding efforts o Ongoing encouragement of public common responsibility * o Create linkages to future pre-crisis activities

Note. Practices followed by * indicate they are specific practices applicable to the social media context.

Table 3: Revised Crisis and Emergency Risk Communication model

6 Conclusion

There are several takeaway lessons from this study of Facebook and LinkedIn's real-time power and its implications for crisis management and leadership. The case study exemplifies how Facebook and LinkedIn can be used to improve communication during a public health crisis by leaders and health-focused organisations to improve awareness and response. The CERC model implies that risk messages, warnings, and preparations should convey to the public during the pre-outbreak phase ensuring the public's awareness related to the crisis. This study findings also show that effective crisis communication should start in the early stage of the crisis to improve the public's awareness of the crisis. Then need to improve the communication to the public, seeking to reduce uncertainty and reassurance as well as to address the fake news/rumours during the outbreak to avoid unnecessary panicking situations. The post-crisis phases can be used to evaluate the success measures and lessons learned to avoid a second wave of the virus, and this is the foundation of effective risk and crisis communication. The CERC model outlines specific communication tactics across various stages of the continuing pandemic, and this allows leaders and health organisations to provide strategic communication during an outbreak. These research findings demonstrate that the CERC model is a viable framework that can be used to improve the risks and crisis communication during a crisis by leaders and health focus organisations.

Secondly, regarding the second wave of COVID-91 pandemic in Sri Lanka, which was attributed to an outbreak at a garment factory and fish market, emerged during the end of October showed the importance of ongoing communication strategies and best practices such as "related healthcare educations to prevent possible second wave; inform and persuade about ongoing clean-up, remediation, recovery, and rebuilding efforts; ongoing encouragement of public common responsibility even sometime after the post-crisis phase to prevent further outbreaks. A possible limitation of this research would be its limited number of social media sources and the Sri Lankan context. Further research can focus on studying the same topic on Twitter, YouTube, Instagram, or similar popular social media platforms.

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Appendix

Crisis and Emergency Risk Communication model (CERC)	
CERC Stages	**Communication Strategies**

Pre-crisis	**Risk messages, Warnings, Preparations** Communication and education campaigns targeted to both the public and the response community to facilitate: - Monitoring and recognition of emerging risks; - General public understanding of risk; - Public preparation for the possibility of an adverse event; - Changes in behaviour to reduce the likelihood of harm (self-efficacy); - Specific warning messages regarding some eminent threat; - Alliances and cooperation with agencies, organisations, and groups; - Development of consensual recommendations by experts and first responders; - Message development and testing for subsequent stages.
Initial event	**Uncertainty Reduction, Self-efficacy, Reassurance)** Rapid communication to the general public and to affected groups seeking to establish: - Empathy, reassurance, and reduction in emotional turmoil; - Designated crisis/agency spokespersons and formal channels and methods of communication; - General and broad-based understanding of the crisis circumstances, consequences, and anticipated outcomes based on available information; - Reduction of crisis-related uncertainty; - Specific understanding of emergency management and medical community responses; - Understanding self-efficacy and personal response activities.
Maintenance	**(Ongoing Uncertainty Reduction, Self-efficacy, Reassurance)** Communication to the general public and to affected groups seeking to facilitate: - More accurate public understandings of ongoing risks; - Understanding of background factors and issues; - Broad-based support and cooperation with the response and recovery efforts; -Feedback from affected publics and correction of any misunderstandings/rumours; - Ongoing explanation and reiteration of self-efficacy and personal response activities; - Informed decision making by the public based on the understanding of risks/benefits.
Resolution	**(Updates Regarding Resolution, Discussions about Cause and New Risks/New Understandings of Risk)** Public communication and campaigns directed toward the general public and affected groups seeking to: - Inform and persuade about ongoing clean-up, remediation, recovery, and rebuilding efforts; - Facilitate broad-based, honest, and open discussion and resolution of issues regarding cause, blame, responsibility, and adequacy of response; - Improve/create public understanding of new risks and new understandings of risk as well as new risk avoidance behaviours and response procedures; - Promote the activities and capabilities of agencies and organisations to reinforce positive corporate identity and image
Evaluation	**(Discussions of Adequacy of Response; Consensus About Lessons and New Understandings of Risks)** Communication directed toward agencies and the response community to: - Evaluate and assess responses, including communication effectiveness. - Document, formalise, and communicate lessons learned. - Determine specific actions to improve crisis communication and crisis response capability. - Create linkages to pre-crisis activities.

Table A: Crisis and Emergency Risk Communication model, Adopted from (Reynolds and Seeger, 2005).