National Health Disaster Communication on Facebook and Twitter during COVID-19: A qualitative case study

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Abstract

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The world has experienced unexpected health disasters like for instance the Ebola virus, Plague and now the world-wide pandemic: coronavirus. Previous research highlights the need for knowledge about long-lasting health disasters from a managerial viewpoint. This study therefore concentrates on the Norwegian Institute of Public Health's (NIPH) communication on Twitter and Facebook, with the coronavirus as a case study. This research is one of few that has the focus on a pandemic with the Crisis and Emergency Risk Communication model (CERC). CERC was used to analyze the qualitative content analysis of the NIPH's Twitter and Facebook posts from March and February 2020, as well as a qualitative semi-structured interview of one person from the NIPH. The NIPH used the CERC model, however not in a chronological manner as the model implies. Likewise, analyzing on how their communication evolved during the course of the pandemic, there was a lack of consistency with their communication on the different platforms which shows room for improvement regarding their strategy. This research also revealed developments towards the CERC model to be more suitable for social media as well as for long-lasting pandemics. Consequently, it could improve health disaster communication on social media.

Keywords: Health Disaster Communication, Crisis Communication, Strategic Communication, COVID-19, Facebook, Twitter.

Word count:19,868

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1.   Introduction and Problematization

The plague, the Zika virus and the Ebola virus are some examples of previous health disasters. However, as we are experiencing under the current coronavirus pandemic, they have an enormous impact in our daily life.

> Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus […]. The best way to prevent and slow down transmission is to be well informed about the COVID-19 virus, the disease it causes and how it spreads. (WHO, n.d.a).

This is the World Health Organization's (WHO) description of the current worldwide pandemic that will further be referred to as COVID-19 in this paper. According to the World Health Organization's timeline of COVID-19, the first trace of the virus was in the Republic of China late December 2019. The virus cases evolved, and WHO made a call for action in March 2020, after the number of cases reached over 1,000,000 globally. This call included that every country needed to, among other things, control and delay the impact of the virus (WHO, n.d.b.). To do this, communication is an important aspect. As WHO stated, there is a need for informing on how to prevent the spread of the virus, whereas a communication strategy for health agencies would be beneficial to prevent and inform about the virus (WHO, n.d.a).

Referring to the term *crisis*, unpredictability, threats and uncertainty are important keywords. Since our society constantly changes, with different risks that could evolve into crises and disasters, there is indeed a need for strategic communication to face it in a strategic manner (Falkheimer & Heide, 2018). Researchers also argue that a *disaster* is an evolvement from a crisis (e.g., November & Leanza, 2016; Reynolds, 2002). As for COVID-19's consequences there are several aspects that should be taken into consideration, like for instance disaster communication on social media.

Social media has provided a new way of communicating, also when it comes to disaster communication and how the public are using it, like as a tool for mental support during a disaster (Palen & Hughes, 2018). Social media could make it easier for organizations to inform communities about health issues during disasters by public health agencies, municipalities and states (Houston et. al., 2014). Social media includes different platforms with different purposes and usages. Haro-de-Rosario et al., (2018) mention Facebook and Twitter as popular platforms. Facebook is used for personalized communication that provides opportunities for conversations and dialogues. While Twitter has a limited 280-character on posts and is constructed for more frequent and precise information. Twitter also provides anonymity in comparison to Facebook (Haro-de-Rosario et al., 2018). Due to the mentioned differences, it would be of interest to investigate if there are different strategies towards the platforms with reference to disaster communication.

Taking the different terms into consideration, COVID-19 is an example of a disaster due to the virus' development, as well as a public health disaster concerning its extreme outbreak and the risk to the public's health (Reynolds & Seeger, 2007). Together with the mentioned aspects of social media there will be a focus on the phenomenon *health disaster communication* in this thesis. The main focus is to investigate how the Norwegian Institute of Public Health (NIPH) has communicated about the COVID-19 health disaster with the Norwegian population by means of social media, specifically Twitter and Facebook. By this, it will provide a Nordic managerial point of view.

1.1 Aim and Research Question

In this study, the way in how the NIPH communicated during the COVID-19 pandemic on Facebook and Twitter will be evaluated deductively according to the Crisis and Emergency Risk Communication (CERC) model (Reynolds & Seeger, 2007). Initially, this model was not intended for communication on social media, but as a tool that could be used by health communication practitioners during crisis and emergency events (Reynolds & Seeger, 2007). Thus, this study aims to contribute to developing the CERC model, especially when it comes to disaster communication during a long-lasting pandemic. This study could also contribute to the practice of health disaster communication, specifically for the NIPH.

The research questions posed for this study are:

RQ1: In what way does the Norwegian Institute of Public Health apply the CERC model in their COVID-19 health disaster communication on Facebook and Twitter?

RQ2: In what way did the health disaster communication from the Norwegian Institute of Public Health evolve during the course of the COVID-19 pandemic?

1.2 Delimitation

Reynolds and Matthew W. Seeger (2007) mentioned the CERC model regarding crisis and emergency risk communication and health risks. It was explained that "the five-stage CERC model assumes that crises will develop in largely predictable and systematic ways: from risk, to eruption, to clean-up and recovery on into evaluation" (Reynolds & Seeger, 2007, p. 51). In this study, there will be conducted a qualitative content analysis of the NIPH's Twitter and Facebook posts where the CERC model will be used to analyze its content.

The focus is to investigate how the department's way of communicating could have changed or developed when comparing the months March 2020 and December 2020. Looking at the communication from the beginning of the virus in March (when WHO called for action) to a later stage makes it possible to analyze eventual changes or developments in the way the NIPH communicated on social media. December 2020 was chosen since the UN General Assembly gave information about the COVID-19 response with focus on vaccine's as well as the new COVID-19 variants (WHO, n.d.b.).

Regarding the data that was analyzed, the NIPH had 54 Twitter posts and 12 Facebook posts in March 2020, while in December 2020 they had 11 Twitter posts and 11 Facebook posts. Altogether, there are 88 posts (excluding posts that were not about COVID-19). This was done by conducting a content analysis that "seeks to analyze data within a specific context in view of the meanings someone – a group or a culture – attributes to them" (Krippendorff, 1989, p. 403.) In this research the six-step research process was used: design, unitizing, sampling, coding, drawing inferences and validation while investigating the social media content on the mentioned platforms to be able analyzing the content (Krippendorff, 1989). Likewise, the CERC model was set as a basis on how it can be connected to different phases during the crisis where the following was used: *pre-crisis*, *initial crisis* and *maintenance* (Reynolds &

Seeger, 2007, p. 51). A qualitative study can give the possibility of an in-depth understanding of the NIPH's health risk communication strategies.

To provide a deeper understanding of the NIPH's communication strategy, there was conducted a qualitative semi-structured interview with a communication practitioner in the communication department (Brinkmann & Kvale, 2015). The interview, as for the qualitative content analysis, was analyzed deductively using the CERC model. Previous research about risk communication for public health (e.g., Glik, 2007; Vraga & Jacobsen, 2020) and social media regarding crisis communication (e.g., Lwin et al., 2018; Malecki et al., 2020) will be discussed as well as previous research regarding COVID-19 and how the public perceived crisis communication (e.g., Ataguba & Ataguba, 2020).

Qualitative approaches regarding the methods of this study have its roots in social sciences (symbolic interactionism) and critical scholarship (Krippendorff, 2019). That is why symbolic interactionism is the research paradigm behind this study, with the focus on sense making and interpretation (Prasad, 2018).

1.3 Case Background – COVID-19

Here, the background of the chosen case study will be provided. As the research questions states, this research will study the health disaster communication of the NIPH regarding the global pandemic COVID-19 according to the CERC model. Thus, it is of importance to have knowledge about Norway as a country to comprehend this research.

Norway is one of five Nordic countries and lies in northern Europe. As of February 10, 2021 Norway had 65,547 COVID-19 cases (Statista, 2021). This is 1233,2 infected per 100,000 inhabitants (Brekke & Engebretsen, n.d.a). The emphasis will be on how the public health agency have communicated towards their citizens on the social media platforms Twitter and Facebook. The Norwegian Institute of Public Health is a part of the Ministry of Health and Care Services in Norway and was founded in 1929 with the goal to address health issues in Norway (FHI, n.d.a; 2017). Further, their vision is "better health for all" while their strategy is to provide knowledge to the citizens of Norway about public health status and health services (FHI, 2019).

To understand the situation in Norway regarding the virus, it is important to have knowledge about their approach according to the virus. COVID-19 was handled with recommendations such as physical distancing and behavior regarding hygiene as well as obligatory changes like for instance closing of different institutions to make it possible to flatten the curve regarding infected people (Zickfeld et al., 2020). Norway started with certain recommendations to prevent the spread of the virus from March 12, 2020 (Helsingen et al., 2020). Zickfeld et al. (2020) mentioned in a study about engagement in health-protective behavior in Norway during COVID-19 that 63% of 8,676 (non-representative sample) used the governmental social media platforms to get information about the outbreak. Most of the participants in the study trusted the NIPH most when it came to communication about COVID-19 which made it interesting to investigate further.

In the following chapter, there will be provided a literature review to provide insight in previous research about disaster communication and pandemics as well as digital crisis communication to further define the research gap.

2.   Literature Review

Since COVID-19 is defined as a worldwide pandemic, the literature review concentrates on previous health disasters, such as the Zika outbreak (e.g., Lwin, et. al., 2018) and the H1N1 flu pandemic (e.g., Liu & Kim, 2011) and a review of previous research regarding social media communication during disasters and crisis (e.g., Lovari & Bowen, 2019). After reviewing several research papers, an understanding of different ways of communicating during a pandemic will be provided.

2.1 Disaster Communication

There are different definitions and terms that relate to crisis and disaster communication. Initially, previous research about disaster communication consisted of focusing on response to pre- and post-disaster communication.

In order to understand the field of disaster communication, Le Roux (2013) conducted an analysis of different literature regarding the field of risk reduction where the focus was on communication management in South Africa. A disaster could be defined, according to Le Roux (2013), as an occurrence more severe than a crisis and it could have an enormous impact on society, whether it was due to economic or environmental crisis. A disaster could be a sudden occurrence, or have a slow beginning (Le Roux, 2013). Le Roux (2013) concluded that there is a need for more research on disaster communication, especially on providing information that could be crucial for societies to manage a disaster. Furthermore, it was found that previous research focused primarily on crisis communication in an organizational context, and not in a disaster management context (Le Roux, 2013).

In addition, Spialek and Houston (2019) conducted a quantitative study about Citizen Disaster Communication Assessment (CDCA) that is a measurement to "help communities cope across all phases of a disaster" (p. 1). This research intended to help communities in different phases from natural disasters (before an event, during and after an event). To do this, Spialek and Houston "[…] examined associations between citizen disaster communication, neighbor-

hood belonging, and community resilience" (Spialek & Houston, 2019, p. 6). It was mentioned that the United States has experienced several climate disasters where there was a need for emergency communication towards citizens. For instance, Spialek and Houston's (2019) results indicated that disaster communication with citizens was crucial when it came to forming resilient societies in times of natural disasters, especially when the societies were growing with different cultural backgrounds across areas where a natural disaster could erupt. Therefore, it is important that information would be understood by all citizens, no matter cultural background. It was concluded that the communication processes during disasters should be connected to neighborhood belonging and community resilience. Thus, there should be a focus on citizens belonging in their community when communicating during a disaster for the best communication outcome (Spialek & Houston, 2019).

Another study of relevance is Eisenman et al. (2007) that studied the disaster planning and risk communication during Hurricane Katrina regarding evacuation of minority communities: African Americans from New Orleans. They conducted a qualitative study where they interviewed 58 evacuees to understand factors that influenced their choice of whether to evacuate or not (Eisenman et al., 2007, p.109). The qualitative approach consisted of questions concerning understanding of the communication before the hurricane began, perceptions that could have been of influence regarding evacuation behavior before the hurricane and lastly reflections on what could have adjusted their behavior (Eisenman et al., 2007). Their findings were that partnering with people from the minority communities could improve communication (Eisenman et al., 2007). Additionally, people trusted more on information on social media from their own network rather than from external information from for instance authorities. They concluded that there is a need for improved communication and disaster plans, especially for minority communities, to be more successful in disaster communication. They also highlighted the need for specific and effective disaster plans and better strategies when it comes to preparations before the disaster occurs (Eisenman et al., 2007).

Perry and Lindell (2003) conducted a study about achieving community emergency preparedness and disaster planning of the terrorist attacks of September 11, 2001, with an emphasis on emergency management. Perry and Lindell (2003) mentioned that to be prepared for an emergency, there was a need to react to the threat in a manner that minimized the negative consequences for the health and safety of individuals. Planning for, training and testing an emergency plan before a disaster was therefore needed for the responsible communicators to attain

a favorable communication result. Perry and Lindell (2003) stated that this preparedness often was depicted in a written plan, but it did not mean that you were prepared for a disaster. Being prepared meant being ready for any threats by identifying and predicting it. Further guidelines were needed to be developed including knowledge about the amount of threat, how human responses would be, vulnerability analysis and contacting an expert if there was a lack of knowledge about the emergency. Perry and Lindell (2003) mentioned that guidelines for planning and preparing are important for a positive emergency response outcome to an eventual environmental threat.

In the next section, the nature of health disaster communication will be investigated.

2.2 Health Disaster Communication

Regarding health disaster communication, Kim and Kreps (2020) conducted an analysis of governmental communication in the United States during the COVID-19 pandemic by analyzing communication failures of local, national and international governmental agencies (Kim & Kreps, 2020). Several recommendations and guidelines for efficient government health risk communication were made: being active to respond and seek information to identify risks; develop strong relationships and share important information across societies; clear and transparent communication; centralize information so the leadership of the government could provide the right information; having a clear information strategy; creating a direct communication channel; and protecting minority groups (Kim & Kreps, 2020, p. 407). Moreover, they concluded with the necessity of governments communicating precisely during disasters to receive the desired outcome and the importance with a focus on strategic communication for further crisis that could evolve. The abovementioned communication strategies can be applied by all governments. However, they stated that there should be funding for the best outcome and to minimize misinformation (Kim & Kreps, 2020).

Another research worth mentioning regarding health disaster communication is Ataguba and Ataguba (2020) that conducted a study about the role of effective communication of COVID-19 in developing countries. They emphasized the social determinants of health (SDH) that is "[…] critical determinants of health and health inequalities that are not directly within the health sector." This could for instance be policies for closing schools and restaurants (Ataguba & Ataguba, 2020, p. 1). They highlighted that it was vital with effective communi-

cation for social determinant of health during the COVID-19 pandemic, especially in developing countries. Moreover, they stated that having a crisis and risk strategy is critical in the pre-crisis stage. "The risks associated with miscommunication during the COVID-19 pandemic are undoubtedly high, especially where trust and credibility, for instance, in authorities and governments are eroded" (Ataguba & Ataguba, 2020, p. 3). Their conclusion consisted of amongst other factors that clear communication was important to engage in a community without leaving anybody behind, especially in places with fragile health care systems, to maintain community engagement (Ataguba & Ataguba, 2020).

Moreover, Liu and Kim (2011) conducted a quantitative content analysis on traditional and social media communication about the 2009 H1N1 pandemic where they focused on health communicators of 13 organizations from the United States. Their findings were amongst other, that the health communicators were using traditional media to a larger extent than social media. Their findings additionally presented that the organization's use of social media did not include important health behaviors, even though the public used social media to get new information. Therefore, social media was seen as a beneficial asset for the organizations and should be used more in their issue management. Moreover, the public's reactions to their communication were "confusion, alert, fear, sympathy and sadness" depending on the pandemic phase (Liu & Kim, 2011, p. 241). They contributed with an understanding about using social media to respond to crisis and how the responses are being framed (Liu & Kim, 2011). Further they mentioned the need for research with the focus on crisis with a long duration to see how communicators adapt their response and strategies over time.

Vraga and Jacobsen (2020) conducted a study of effective health communication during COVID-19. During a disaster it is important to carefully communicate with different types of audiences (Vraga & Jacobsen, 2020). They highlighted the importance of managing misinformation that was also prevalent in previous crises such as the Zika virus outbreak. Their focus was on challenges such as information overload, information uncertainty and misinformation as well as the impact of the overall health communication (Vraga & Jacobsen, 2020). They highlighted that during a pandemic it was important to provide accurate health information since there could be an issue with information overload which could cause uncertainties for the receiver that would lead to inefficient communication (Vraga & Jacobsen, 2020). This is especially relevant when it comes to communication on social media, however, it could also provide a chance of effective communication. Thus, there is a need for communi-

cation strategies where the abovementioned challenges are taken into consideration (Vraga & Jacobsen, 2020).

2.3 Digital Disaster Communication

When it comes to disaster communication, it is of relevance to look at previous research about digital disaster communication. In this sense, an understanding on how the NIPH used Twitter and Facebook could be provided.

Malecki, et al. (2020) conducted a research about crisis communication and how the public perceived COVID-19 information communicated in the era of social media. They argued that in the times of social media, it always has had an important role in informing people about disasters. However, they also addressed the challenge of the spread of miscommunication. It was found that social media's role is increasing, which could make it a bigger asset for important information in the future, but also a threat (Malecki et al., 2020). They therefore highlighted the need of addressing aspects of the pandemic as it evolves where these keywords should be thought of for an efficient communication strategy: "plan carefully, accept the public as partner, be transparent and honest, speak with compassion and evaluate and reassess strategies" to avoid misinformation (Malecki et al., 2020, p. 5). This study had its focus on perception of communication and the importance of strategies especially towards unknown crises such as COVID-19. Moreover, in their studies the public trusted more in institutions that provided relevant information rather than from other sources. Malecki et al., (2020) mentioned that social media should have an important part of risk communication plans to be able to quickly inform the public. It is of importance to use it in the right manner, by for instance using the abovementioned keywords.

Further, Guidry et al. (2017) mentioned the need for knowledge about the use of social media regarding health risk communication. Thus, they studied social media posts (Instagram and Twitter) from three health organizations regarding the Ebola virus. Their findings were that the health organizations did not communicate in the same way on Instagram as on Twitter. This could lead to different understanding by the public since people might for example only use one of the platforms (Guidry et al., 2017). Moreover, they mentioned the importance of communicating positive messages since negative information affected the public negatively. The public needed to have an impression of the organization beforehand, thus it was im-

portant to be active on their social media channels before the crisis for the public to trust them as a source during a crisis (Guidry et al., 2017). They concluded that to build trust there was a need for "frequent, consistent and interactive communication with the public" (Guidry et al., 2017, p. 484).

Another example was the study of Eriksson and Olsson (2016) that was about the use of Facebook and Twitter for crisis communication among Swedish citizens that can be of importance in disaster communication. Both the communication professionals and citizens that participated, had more experience with Facebook than Twitter and meant that Facebook was more important to use for crisis communication while Twitter was seen as a smaller platform. Moreover, Eriksson and Olsson (2016) highlighted that the citizens viewed Twitter more as a platform for early warnings, while Facebook was viewed as a platform for debate and connecting with friends.

Lovari and Bowen (2019) investigated the use of social media regarding disaster communication where they focused on strategies, ethical implications and barriers during natural disasters. To do this, they examined a flooding disaster in South Carolina in 2015 and how the state's emergency managers used social media to communicate and inform both the media and the citizens. Lovari and Bowen (2019) interviewed 10 communication professionals about their organization's emergency response. This study revealed that there was a lack of coordination between the communicators where the training could be an important part to improve the coordination (Lovari & Bowen, 2019). They concluded with communicators being trained and having emergency tests where social media has a role could be beneficial for more effective disaster communication by increasing the knowledge of strategies before, during and after a crisis. Additionally, ethical concerns should be taken into consideration to promote honest information. Taking the abovementioned into account, health organizations could prevent misinformation during crises.

Lastly, Lwin et al. (2018) investigated the communication by health organizations on Facebook regarding the Zika outbreak with an emphasis on disaster and risk strategies and how social media could be used for strategic communications during health crises. Rather looking at the responses of the messages, this study focused on the message from the health organization's point of view. They adapted the Crisis and Emergency Risk Communication Model by Reynold and Seeger (2007), to suit social media. Several characteristic aspects were consid-

ered to be combined or changed to communicate on social media. They stated that the model should be developed further for use in different types of disaster and social media platforms as well as the cruciality of continuously adapt the plan as the communities' needs are changing (Lwin et al., 2018). Overall, their conclusion emphasized the importance of being prepared with a strategy for communication in all phases of an outbreak (Lwin et al., 2018).

2.4 Synthesis and Research Gap

In line with the presented literature review, there was a distinguishment between several types of communication.

As Le Roux (2013) mentioned a disaster is something bigger than a crisis, like the COVID-19 pandemic. Le Roux's (2013) findings indicated that there is a need for more research when it comes to disasters in management contexts. There has also been a focus on different guidelines that could be used by organizations to be better prepared for a crisis (e.g., Perry & Lindell, 2003; Kim & Kreps 2020; Lovari & Bowen, 2019). Nevertheless, the existing research about disaster communication could suggest that it merely focused on people's perception of information that is given, whether it is for a society or how information is perceived for minorities regarding for instance disasters like Hurricane Katrina (Spialek & Houston, 2019; Eisenman et al., 2007).

Concerning digital disaster communication there has been argued that there is a need for further research on strategies on how to use social media in a beneficial way during disasters to avoid miscommunication and confusion (Malecki, Keating & Safdar, 2020; Guidry et al., 2017; Lwin et al., 2018). It could also be argued that the emphasis has been on the perception of the communication rather than how and why the information has been communicated from a management point of view (Vraga & Jacobsen, 2020; Liu & Kim, 2011). There is a need for more research when it comes to using social media in a strategic way, also for several social media platforms (Lwin et al., 2018). As Malecki et al. (2020) had their focus on, using social media as a part of the risk strategy could be beneficial for efficient communication.

Taking the literature review into account it could express the relevance to look at health disaster communication with COVID-19 as a case with a focus on social media, since previous research has focused on shorter disasters like for instance natural disasters (Eisenman et al.,

2007). COVID-19 is a current long-term global pandemic which makes it highly relevant to analyze. As Lwin et al. (2018) stated, the CERC model should be developed further for longer crisis and also for communication on other digital platforms. Conducting a qualitative content analysis with the use of the CERC model could as well provide an in-depth knowledge about how to strategically communicate in an efficient way. Thus, this study could contribute to the CERC model with a strategic focus on disaster management to a long-lasting pandemic rather than focusing on the public's reaction to the social media content. At the same time, looking at Norway could provide guidance on how the health agencies have communicated when it comes to COVID-19.

3.   Theory

In this chapter, theoretical approaches within crisis communication will be discussed to justify the chosen theory for this research. Several theories are worth mentioning since they are influenced by each other (Mak & Song, 2019). Looking at the literature review, there were mentioned several terms like for instance risk, disaster and crisis. Likewise, looking at the different theories, the terms are used synonymously (Boin & Kuipers, 2018). Hence, there will be distinguished features of crisis communication models to further investigate the differences and similarities between the terms and how it has been used.

Moreover, in the view of crisis communication, the dominant theories that has been used are Situational Crisis Communication Theory and Social-Mediated Crisis Communication Model (Liu & Fraustino, 2014). However, it will be argued that the Crisis and Emergency Risk Communication model (CERC) is the theory that will be used in this study to be able to provide answers to the research questions. In the following sections an overview of the above-mentioned theories will be addressed.

3.1 The Situational Crisis Communication Theory (SCCT)

One of the most used crisis communication theory is Coombs' "Situational Crisis Communication Theory" (SCCT) (Claeys & Coombs, 2020). SCCT can be used as a framework for managers to protect organizations from an eventual crisis, where the stakeholders' considerations about the degree to which an organization is responsible or not for a crisis, is the core of the theory (Coombs, 2004). Further, it emphasizes the attribution theory together with language of crisis communication to get an understanding on how people perceive crisis communication messages (Coombs & Holladay, 2010). Coombs (2007) explains a crisis as an event that somehow is damaging an organization's reputation which can affect how the organization's stakeholders are interacting. In other words, it could be a sudden or an unexpected situation that threatens the organization's reputation or financial health. This theory addresses the way in which organization responds to the crisis as well as stakeholders' reaction to the crisis.

There are several categories that are important when it comes to SCCT. Firstly, there is an initial crisis responsibility. In this sense, there is a need to identify the crisis in addition to how it is being framed, especially when it comes to how the crisis is framed by the mass media. Coombs (2004) distinguishes between several types of crises that are divided in three different clusters: "victim crisis cluster, accidental crisis cluster and intentional crisis cluster" (p. 270). Secondly, crisis history is about the organization's management of similar crises in the past and how well the organization addressed their stakeholders during the previous crisis. Thirdly, earlier relational reputation is about how the stakeholders have perceived the organization's behavior in previous crises which could lead to a positive or negative relationship (Coombs, 2004; 2007). These categories identify the responsibility and the amount of threat. In addition, the crisis history and prior reputation can work as intensifiers regarding the organization's reputation (Coombs & Holladay, 2010). The amount of responsibility an organization has during a prior or current crisis is negative for the organization's reputation. In SCCT there is a need for a theoretical link between a crisis and the best crisis response strategy to prevent negative outcomes. SCCT provides a list of crisis response strategies that could be used to ward off negative reactions. The main strategies are deny, diminish, rebuild and reinforcing (Coombs, 2004; 2007).

The aforesaid discussion indicates that SCCT provides a framework for organizations to manage crises. Recent studies using this theory have for instance focused on organizational crisis response and how to manage crisis communication together with Twitter responses (e.g., Barbe & Pennington-Gray, 2018; Kriyantono & McKenna, 2019).

SCCT could be of relevance if the focus of this paper was on organizational crisis communication management as well as stakeholder's point of view. Similarly, if for instance a health agency does not communicate in an effective way, it can harm their reputation and SCCT could then work as a framework to repair their reputation. Even though SCCT is a framework that could be useful to predict effective responses to a crisis, it does not specifically address health communication during a pandemic or how the public reacts to health communication messages on social media.

3.2 The Social-mediated Crisis Communication Model (SMCC)

Since the SCCT theory is not directly focusing on the use of social media, *the Social-Mediated Crisis Communication Model* (SMCC) will be the following theory under discussion.

SMCC is developed from the SCCT theory, where the focus of SMCC is on social media and to what extent social media could be the reason for creating an organizational crisis. This could for example be of how the organization is using their social media platforms, or if there is misinformation about the organization because of social media (Dudo & Kahlor, 2016). SMCC consists of two parts; one that focuses on the source/form of the crisis communication and how it affects organizations' response, and another on how organizations should respond according to social-mediated crisis response strategies (Liu et al., 2011). SMCC provides three types of audiences that produces and consumes information before, during and after a crisis and how they interact with the organization (Liu et al., 2011; Austin et al., 2012). The audiences could be defined as:

> (1) influential social media creators, who create crisis information for others to consume; (2) social media followers who consume the influential social media creators' crisis information; and (3) social media inactives, who may consume influential social media creators' crisis information indirectly through word-of-mouth communication with social media followers and or traditional media who follow influential social media creators and or social media followers (Austin et. al., 2012, p. 192).

The public has a lot of power when it for example comes to spreading the word by sharing and commenting various messages and according to this model this can happen directly or indirectly (Mak & Song, 2019). For instance, the public tends to turn to social media when there is a crisis to get emotional support (Liu et al., 2011). When it comes to how the public respond to organizational messages through social media, SMCC provides conditions that could be taken into consideration before giving out information: "(1) crisis origin, (2) crisis type, (3) organizational infrastructure, (4) message strategy, and (5) message form" (Dudo & Kahlor, 2016, p. 172). This will consider the starting point of the crisis and also be important to how the public will address the message

This model has been used in earlier studies with a focus on crisis communication and on how, for instance, employees can use social media to harm organizations that are already struck by a crisis (e.g., Opitz et al., 2017) or what motivates the public to evaluate crisis information (e.g., Lu & Jin, 2020). However, it has also been used within disaster communication by exploring newer technology such as augmented reality versus traditional media and how it can affect the public's responses (e.g., Fraustino et al., 2018).

SMCC can provide information on how crisis communication practitioners should respond towards social media responses from the public in a strategic manner (Dudo & Kahlor, 2016). The focus is on how to respond to the public's reactions on social media, and not necessarily in what way organizations should communicate the crisis message nor is it specific to the use of health organizations.

3.3 The Crisis and Emergency Risk Communication Model (CERC)

The mentioned theories have been argued to be popular regarding crisis communication and even though SMCC has its focus on social media, it is not specifically designed for health authorities and how they should strategically communicate with the public (Liu & Fraustino, 2014; Lwin et al., 2018). Since this study will concentrate on how health authorities are communicating while analyzing their applied crisis strategy regarding COVID-19, the "Crisis and Emergency Risk Communication" (CERC) theory that focuses on health disaster is valued.

The CERC model was developed by the Center for Disease Control and Prevention with a combination of crisis and emergency risk communication to be used specifically within health communication (Reynolds & Seeger, 2007). To suddenly have an emerging infectious disease is not a new phenomenon, where the plague or cholera are two known examples and now with the COVID-19 pandemic that is affecting countries worldwide. Thus, it is of importance to be prepared for unpredicted risks (Reynolds et al., 2002). The CERC model was created within the public health community after the 9/11 attack and the anthrax contamination risk, to further develop the crisis communication field. It has been used in several studies within public health (Sellnow & Seeger, 2013). The CERC model is divided in five stages; "(1) pre crisis; (2) initial event; (3) maintenance; (4) resolution; and (5) evaluation" (Sellnow & Seeger, 2013, p. 41).

Reynolds and Seeger (2007) describe the communication needs that should be addressed during the stages: (1) pre-crisis communication consists of risk messages, warnings and preparations that is targeted to the community and is meant for to amongst other things, to make the risk understandable, help people prepare for the risk and make them aware of changes in behavior if this is needed; (2) initial event communication is about reducing uncertainty by constantly communicating to the public and affected groups, as well as to maintain empathy and reassurance to decrease the feeling of uncertainty; (3) maintenance is about continuing with communication to reduce the level of uncertainty in the community. This is to increase the level of understanding of the risk that is affecting the community, and to inform the public about decisions that are made based on risks and benefits; (4) resolution is about updating about resolutions and discussions about eventual newer understandings of the risk. This can be done by communicating campaigns to inform and persuade about the recovery of the crisis by having an open discussion about the case; (5) is about evaluating the risks by looking at the effectiveness of the communication and such (Reynolds & Seeger, 2007, p. 52-53).

Reynolds and Seeger (2007) mentioned that not necessarily all crises will follow this step-by-step, but it should provide a comprehensive approach. However, since we are currently in the midst of the pandemic, the focus on this study will be on communication during pre-crisis, initial event and maintenance (stage 1-3). The resolution and evaluation stages are not yet relevant (stage 4-5) because the pandemic is still ongoing at the time of the study. This model has earlier been used in a study on the strategic use of Facebook during the Zika outbreak in Singapore (Lwin, et al., 2018). This study was conducted as of the lack of research on how social media should be used by health authorities to communicate about a crisis in different phases. Moreover, Lwin et al. (2018) mentioned that the CERC model is yet to be used during an epidemic to analyze communication from health authorities by means of social media. Due to this, they further analyzed Facebook posts where they coded the messages into the different phases of the CERC model to provide an understanding on how the health authorities used Facebook to communicate about the Zika virus next to the crisis phases (Lwin et al., 2018). Further, they focused on how the public reacted to their messages by controlling the amount of likes and how many shared the health authority's content on Facebook and the public's comments. In conclusion, the public reacted the most to content that raised awareness of the Zika virus in the pre-outbreak phase and they appreciated information directly to the public rather than cooperation between organizations (Lwin et al., 2018). Likewise, this study indicated that social media can be used together with the CERC model when it comes to how to

strategically communicate by means of social media during a health disaster. However, to use this model together with social media it needs to be further developed. Lwin et al., (2018) developed the model for their study by adding and changing several characteristics of the categories in the phases of the CERC model so that it was suitable for their study. Still, they mentioned it should be developed further also with an emphasize on other social media platforms than only Facebook combined with a longer crisis where COVID-19 is a suitable example. In the following table the nature of the communication during each stage are described.

Table 1

An overview of the Crisis and Emergency Risk Communication (CERC) model stage 1-3.

Stage:	Communication:
1. 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 behavior to reduce the likelihood of harm (self-efficacy) - Specific warning messages regarding some eminent threat - Alliances and cooperation with agencies, organizations, and groups - Development of consensual recommendations by experts and first responders - Message development and testing for subsequent stages
2. 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 of self-efficacy and personal response activities (how/where to get more information)

Stage:	Communication:
3. 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 response and recovery efforts - Feedback from affected publics and correction of any misunderstandings/rumors - Ongoing explanation and reiteration of self-efficacy and personal response activities (how/where to get more information) begun in Stage 2. - Informed decision making by the public based on under-standing of risks/benefits

Note. This is a modified model of step 1-3 of the CERC model by Reynolds & Seeger (2007, p. 52-53)

3.4 Synopsis

In this section a summary of the different theories will be discussed to explain the choice of the theory for this research. Referring to this paper's research question, it focuses on how the health authorities have used the social media channels Facebook and Twitter to communicate the COVID-19 pandemic.

To begin with, looking at SCCT and SMCC it can be argued that the theories mostly have its focus on the perceived communication by the public, whether it is for emotional support or for protecting a reputation for an organization (Coombs, 2007; Liu et al., 2011). Regarding the CERC model it mentioned *risk* as an important factor where the other models focus mostly on *crisis*. Reynolds and Seeger (2007) mention that crisis is a limited form of risk and says that "in practice, risk communication most often involves the production of public messages regarding health risks and environmental hazards" (p. 45). As a result, it can be argued that the abovementioned theories regarding risk communication (SCCT and SMCC) is important for the perceiver's perspective and not necessarily from the sender's perspective.

The different theories do not directly distinguish between crisis/risk/disaster communication. With that said, SCCT could be argued to have its focus on organizational crisis communication (Coombs, 2004) SMCC focuses on crisis communication on social media (Liu, Austin & Jin, 2011) and CERC has its focus on disaster emergencies (Reynolds, 2002). However, the theories could be applicable towards disaster communication. Regarding the CERC model, Lwin et al. (2018) was one of the first that tested it when it comes to health outbreak commu-

nication on social media. There is a need for further studies on the use of the CERC model to continually develop it to understand challenges to communicating about health risks and health pandemics. By looking at the different features of the theories it could be argued that the CERC model will fit for this thesis, especially since the focus is on the sender's (health authorities') point of view. As a result, this study could contribute by developing the CERC model to find out how health authorities communicate during a long-lasting pandemic. To further understand the differences and similarities between the mentioned theories have a look at table 2.

Table 2

A summary of the mentioned theories.

Theory:	Focus area:
Situational Crisis Communication Theory (SCCT)	Focus on crisis communication, perceiver point of view, strategy on protecting organization's reputation, sudden/unexpected situation
The Social-Mediated Crisis Communication Model (SMCC)	Development of SCCT, focus on crisis communication mainly on social media, strategy on protecting organization's reputation, perceiver point of view, audience's behavior on social media
Crisis and Emergency Risk Communication (CERC)	Focus on crisis and risk communication, sender point of view, focus on health crisis communication

Note. The table is developed by using already existing theory (Reynolds & Seeger, 2007; Liu et al., 2011; Coombs, 2004).

In the next chapter the methodology of the thesis will be presented.

4.   Methodology

In this chapter the epistemological background, research approaches, data collections and analysis of this thesis is provided. First, a qualitative content analysis was conducted of Facebook and Twitter posts that provided insight to the meaning of the posts with the use of systematic analysis to discover the core ideas and themes (Drisko & Maschi, 2016). Second, a semi-structured interview with a person from the NIPH provided insight into their health disaster communication in practice. The aspects in this chapter will be divided in the two research approaches.

4.1 Epistemological Perspective

A qualitative content analysis as well as a qualitative semi-structured interview was conducted to answer the research questions about how the NIPH had used social media in their communication concerning COVID-19. An interpretive paradigm was of relevance to obtain an understanding of their communicative actions. Through phenomenology, experiencing any reality occurs when interpreting. All the interpretive traditions underline the human interpretation to gain knowledge about the social world (Prasad, 2018). Within this paradigm, the focus was on symbolic interactionism (SI), a non-positivistic tradition, where the focus was on sense making and construction of reality (Prasad, 2018). SI is based on Herbert Mead's work and focuses on social interactions, psychology, internal dynamics and how people interact and create meaning (Alver & Cager, 2015). Conducting a content analysis, the interpretation of the posts provided a deeper understanding on how and why the texts were created which influenced the social world and how it was perceived. Moreover, earlier studies on communication using this tradition focused on amongst other things, analysis of interpersonal communication and interpretation of meaning (Alver & Cager, 2015). However, there are some criticisms towards symbolic interactionism like for instance that it does not focus on power relations or class and power, but the concept of taking action (Alver & Cager, 2015).

4.2 Research Approach

This research will use qualitative methods to explore how the NIPH communicated on Facebook and Twitter. Doing so, the used research approaches was qualitative content analysis and qualitative semi-structured interview.

4.2.1 Qualitative Content Analysis

There are two types of content analysis, namely quantitative and qualitative. The main distinction is that the categories in quantitative is prearranged where the data is generated from another source than what is being analyzed, while qualitative content analysis focus on data that are categorized from where it happens through reading a text (Forman & Damschroder, 2008). In this study there was conducted a qualitative content analysis to be able to analyze the data (Twitter and Facebook posts) within a specific context (digital health disaster communication) where there were made suggestions of the data that provided different interpretations (Krippendorff, 1989; 2019).

Conducting a qualitative content analysis consists of six steps: *unitizing* (definition of units), *sampling* (selection plans), *recoding/coding* (guidelines on how to code), *drawing inferences* (previous constructs or models of the context) and *validate* (answer to the research question by using existing disciplines) (Krippendorff 1989, p. 406-407; 2019, p. 88). However, in comparison with quantitative content analysis, qualitative scholars do not necessarily follow a particular pattern and therefore has the ability to revise, going backwards through the steps and change the interpretations on the go to gain a holistic knowledge about the data (Krippendorff, 2019). This made it possible for this study to go in-depth in the content on Twitter and Facebook with room for different interpretations.

4.2.2 Qualitative Semi-structured Interview

Conducting a qualitative semi-structured interview provided descriptions on how the interviewee (from the NIPH) interpreted the meaning of the phenomenon health disaster communication (Brinkmann & Kvale, 2015). Conducting a semi-structured interview allowed the researcher and the interviewee to have an open conversation, and the researcher could ask follow-up questions if the interviewee had unclear formulation or if the researcher wanted more information (Brinkmann & Kvale, 2015). On the other hand, qualitative unstructured

interviews do not provide the opportunity to have an interview guide and the researcher needs to ask questions on the go, which is why a semi-structured interview was more suitable for this study (Brinkmann & Kvale, 2015). In order to further contextualize the content from the Facebook and Twitter posts, this research method was used to understand the communicative intent of the department responsible for the messages.

In the next part the sampling of the qualitative content analysis and the qualitative semi-structured interview will be addressed.

4.3 Sampling

To answer the research questions, it was of importance to limit what there was to analyze. Since COVID-19 is a long-lasting pandemic, there were several Twitter and Facebook posts that could be of relevance. Especially, since this paper also aims to analyze if the NIPH's communication had developed during COVID-19.

4.3.1 Qualitative Content Analysis

Regarding the qualitative content analysis of the social media content on Facebook and Twitter, there were many posts that could been analyzed. Therefore, a sampling plan was needed to decide what there was to observe, also called unitizing (Krippendorff, 2019). The units identified and analyzed included: 65 Twitter posts (@Folkehelseinst) and 23 Facebook posts (@folkehelseinstituttet.no) from the NIPH's accounts (March and December 2020) which together consisted of a sample size of 88 posts/units (excluding posts that was not about COVID-19). This can be explained as *sampling units* and *purposive sampling* since units that were most relevant answering the research questions were part of the sample: posts from March 2020 and December 2020 that contained information about COVID-19 (Krippendorff, 2019). Posts from March 2020 was focused on since WHO called for action to delay the impact of the virus (WHO, n.d.b). Posts from December 2020 were analyzed to identify possible changes in the health disaster communication as the pandemic evolved, with the new versions of the COVID-19 virus, as well as possible vaccines against it (WHO, n.d.b).

4.3.2 Qualitative Semi-structured Interview

Concerning the qualitative semi-structured interview, the interview subject was one person from the NIPH. The interviewee was chosen due to the person's knowledge about the NIPH's communication. An interview guide containing questions based on the CERC model developed by Reynolds and Seeger (2007) as well as literature regarding digital disaster communication (e.g., Lovari & Bowen 2019; Lwin et al., 2018) was used for to develop the questions in the interview guide. More on, the guide was divided into themes to ensure covering all aspects[1].

4.4 Data Collection Methods

Being able to analyze the qualitative content analysis and the qualitative semi-structured interview, there was collected data. In the following paragraphs this will be discussed.

4.4.1 Qualitative Content Analysis

"The systematic start to a qualitative data analysis usually comes with the creation of categories and a coding scheme" (Lindlof & Taylor, 2011, p. 246). Before starting to analyze the data, there was a need for a system. Lindlof and Taylor (2011) mentioned that a category is something that arrives from a general phenomenon and that categorization is the analytic process on how the data is to be analyzed. The data was reduced after creating categories to be able to analyze what was important to answer the research questions in this study. To do this, the posts were divided in categories on digital health disaster communication according to the CERC model (Reynolds & Seeger, 2007).

Stage 1 (pre-crisis) of the CERC model was used to see how the NIPH had planned and responded in their communication when it came to risk messages, warnings and preparations. The content was coded in "risk messages, warning messages and preparation messages". This provided an understanding on how the health organization had planned their communication and their initial response to the pandemic. *Stage 2* (initial event) was explained to provide correct and relevant information to the public regarding an event. In this stage, the public wants the most recent information, and it is important that this is done in a strategic way to

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[1] See appendix 2 for interview guide.

avoid public anxiety (Reynolds, 2002). It was of relevance in this study to analyze how the NIPH choose to communicate to establish uncertainty, self-efficacy and reassurance where the content was coded in "uncertainty reduction establishment, self-efficacy establishment and reassurance establishment". *Stage 3* (maintenance), the last stage of relevance in this study, is when the event is evolving with increased media interest (Reynolds et al., 2002). There could be misinformation that is spreading and unexpected evolvement of the event. In this stage it is important to communicate precisely to ensure that the public is aware that the information is correct and not misinterpreted (Reynolds et al., 2002). Looking at a later stage of the pandemic could provide information on how the health organization have developed their communication while the pandemic has evolved. To get these details, the data was coded into these categories: "uncertainty reduction facilitation, self-efficacy facilitation, reassurance facilitation and vaccine".

4.4.2   *Qualitative Semi-structured Interview*

The interview was analyzed according to the following themes: behavior on social media, digital communication during crisis and digital health disaster communication. Letting the interviewee be comfortable with the situation, the interview started with fundamental questions about the communication department and their behavior on social media (Brinkmann & Kvale, 2015). After, the questions developed to be specifically about the NIPH's strategy towards COVID-19 and more specific towards social media and health disaster communication. The aim was to acknowledge their strategic way of communicating during a crisis where the questions derived from the literature review as well as the CERC model. Therefore, in the end of the interview this was taken into account, where a clarification of the answers was made to be sure there was enough data to answer the research questions[2] (Brinkmann & Kvale, 2015).

4.5 Ethical Considerations

Ethical considerations are especially of importance regarding interviews since it consists of research of private lives which has been taken into consideration in this paper (Brinkmann & Kvale, 2015). Before the interview, the researcher obtained the interviewee's consent to par-

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[2] See appendix 2 for the interview guide.

ticipate by providing a consent form with information about the study[3]. Brinkmann and Kvale (2015) mentioned the importance of the setting of the interview as well as the first impression. In the beginning of the interview a friendly atmosphere was established, and a briefing of the signed consent form, purpose of the research as well as potential questions regarding the nature of the study were addressed. The interviewee was as well assured anonymity. In this study the interview was conducted via the digital platform Zoom because of the COVID-19 pandemic, but also because of the distance to the interviewee's office. Being able to transcribe the interview, an approval of starting to record the interview was gained before recording it. Since the researcher of this study is originally Norwegian, there was an opportunity to conduct the interview in the native language of the interviewee from the NIPH.

4.6 Data Analysis Methods

In this section, a data analysis of the data collection is addressed to further being able to see patterns and meanings towards the research questions.

4.6.1 Qualitative Content Analysis

With regards to the qualitative content analysis, open coding was used. This can be defined as: unrestricted coding of data when going through a text thoroughly and categorizing it in a codebook (Lindlof & Taylor, 2011). This made it possible to analyze the Twitter and Facebook posts in-depth and to change the categories on the go, in case new relevant topics appeared during the content analysis. Even though this is a deductive study, qualitative research provided the opportunity to come up with more codes and topics while analyzing the data (Forman & Damschroder, 2008). While analyzing social media content, it was important to keep in mind that Facebook and Twitter are user-to-user interactive platforms where the receiver has an active role when it comes to meaning creation (Neundorf, 2017).

An example of the coding can be found below of the social media (SoMe) posts. The theme category is explained with a definition as well as an example of a post. In the example, if the content is from Twitter it is marked with **TT**, and Facebook with **FB**. The definitions and categories are derived from the CERC model (Reynolds & Seeger, 2007) combined with the

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[3] See appendix 1 for the consent form.

study where the CERC model was used to analyze Facebook posts during the Zika virus epidemic (Lwin, et. al, 2018).

Table 3

Example of the codebook used for categorizing the content analysis.

Theme Category	Definition	Examples
Pre-crisis		
Risk Messages	General information about the pandemic, information about symptoms	**TT - 18.03.2020:** Status for #koronanorge (#coronanorway) per 18 March 2020: https://fhi.no/nyheter/2020/status-koronasmitte-18-mars/ We have now tested 28,522 people in Norway. The vast majority of those tested are not infected with coronavirus. So far, about five percent of those tested have been diagnosed with #coronavirus
Warning Messages	Messages to special groups/risk groups, information about the number of risks in Norway	**TT - 01.03.2020:** New advice for healthcare professionals who have been in areas with a persistent spread of #coronavirus: stay home from work for 14 days after returning home. https://fhi.no/nyheter/2020/nye-rad-til-helsepersonell-som-har-vart-i-omrader-med-vedvende-spredning-/
Preparation Messages	Changes in the public's behavior, recommendations, asking for feedback	**FB - 20.12.2020:** All travelers from the UK must show a negative corona test when arriving in Norway. In addition, they should take a new test as soon as possible So: Been to the UK in the last 14 days? Take a corona test. Thank you so much for testing!

Theme Category	Definition	Examples
Initial Event		
Uncertainty Reduction Establishment	Case reports, information resources (infographics, videos, press release, press conference)	**TT - 27.03.2020:** We are now developing, together with others, an app that can help reduce time for #infection detection. Privacy and info.security are in focus, and there is still considerable work to be done on how the technology can be implemented in the tracking work: https://fhi.no/nyheter/2020/utvikler-app-for-smitteoppsporing/
Self-efficacy Establishment	Specific preventions, responsibility of the public	**FB - 25.12.2020:** In the long run, vaccines will be able to help us out of the pandemic. Until then, we still need other measures. Download the new Infection Stop app, and let others know if you become infected. Join in bringing everyday life back
Reassurance Establishment	Remove uncertainty, giving emotional support/understanding	**TT - 18.03.2020:** Today at 12.00 outside Uranienboghjemmet in @Oslokommune (@Oslomunicipality)❤️ With singing and clapping from employees and residents of the nursing home, we want to send a big thank you to you in socially critical jobs that now take a tough grip for all of us. #clapfornorway #coronavoluntarywork #coronaNorway
Maintenance		
Uncertainty Reduction Facilitation	Understanding of background factors, like for instance specific groups like minorities	**TT - 26.03.2020:** We have two info films in different languages about the coronavirus. One with advice, and one about quarantine and isolation. They are now available in several languages; Dari, Pashto, Polish, Punjabi, Sorani, Swahili, Urdu and Vietnamese. They are sorted into two playlists on our Youtube channel
Self-efficacy Facilitation	How and where to get more information	**FB - 11.03.2020:** Hi all. We update the pages of our corona guide every single day, and therefore encourage you to use https://www.fhi.no/nettpub/coronavirus/ diligently to find facts and our current advice to both the population, health professionals and others (if you are wondering what's new then you will find history of changes at the bottom of each page that explains what we have done and when we have done it). It is not enough to just check our news items on fhi.no, as the content of these is quickly old news. Finally: Thank you all who give us feedback here. Keep it up. This allows us to bring important issues back to our professionals and improve the information on the website. We read everything and try to answer as much as possible. At the same time, we ask to understand that we prioritize following up questions during our recent posts. Regards Folkehelseinstitutet (NIPH)
Reassurance Facilitation	Feedback from public, corrections of misunderstandings	**TT - 02.03.2020:** We have been notified that an SMS has been sent to individuals from us, where the recipient is informed that they may have #cornavirus and should contact a doctor. This is a fake text message. FHI does not currently use text messages in inquiries to people who are asked to contact the health service.
Vaccine	Information about vaccine, how, what, when	**FB - 04.12.2020:** Who is offered corona vaccine first, and why: https://www.fhi.no/.../recommend-a-prioritize.../. Regardless of where you end up in the vaccine queue, many people may be wondering how this effective vaccine development is possible at all? This film from the Norwegian Medicines Agency will give you a quick introduction of 90 seconds Read more about corona vaccines here: https://legemiddelverket.no/godkjenning/koronavaksiner

4.6.2 *Qualitative Semi-structured Interview*

The semi-structured interview was used to determine whether the NIPH followed a strategic approach in their health disaster communication; and whether their health disaster communication corresponded with the CERC model.

The researcher of this study conducted and analyzed the data which could be a bias. However, using a deductive approach where theory guided the analysis, improved the reliability and validity of analyzing the data from the semi-structured interview (Brinkmann & Kvale, 2015). Coding was used to categorize the interview, where the same codes as for the qualitative content analysis was used, namely the CERC model. This was done by reading through the transcript to find relevant data that could be connected to theory (Brinkmann & Kvale, 2015). However, Brinkmann and Kvale (2015) mentioned a possible limitation doing this, since using categories can make the data that fall within the framework limitable, in other words, not as in-depth.

The interview was transcribed, analyzed and compared to the Twitter and Facebook posts as well as theory (Brinkmann & Kvale, 2015). The transcript was originally written in Norwegian, however, important quotes and aspects for the analysis was translated to English. The translation could for instance not reflect the feeling or meaning of the interviewee, in this case the word is explained in the thesis. The theme category is explained with a definition as well as an example of a quote from the interview. The definitions and categories are derived from the CERC model (Reynolds & Seeger, 2007) combined with the study where the CERC model was used to analyze Facebook posts during the Zika virus epidemic (Lwin, et. al, 2018). Look at Table 4 for an example of the codebook.

Table 4

Example of the codebook used for categorizing the semi-structured interview.

Theme Category	Definition	Examples
Pre-crisis		
Risk Messages	General information about the pandemic, information about symptoms	"I wish I could say we were on Facebook or on Instagram from day 1 since we knew about the virus, but we were not. It was not because we didn't want to, as I said, we have a goal of being available, fast and open about everything. But we probably had our first Facebook post about corona on February 26 and by then we had already been working with corona for a while. […] it was not like we did not want to say anything about it, although we also had a desire to be quicker on social media and noticed that many thought it was a bit strange that we did not talk about it, but talked about other things, which is very understandable"
Warning Messages	Messages to special groups/risk groups, information about the number of risks in Norway	"In our plans, Twitter is the preferred social media channel for that [warning messages]. We [NIPH] have a concrete action card, as we call it, in our crisis communication plan, where the person who is first at work must within one hour post a message, a short informative message, saying we are working on the case and that we will come with more information […]"
Preparation Messages	Changes in the public's behavior, recommendations, asking for feedback	"It [communication] was mostly news coverage in the beginning, not as much on advice as I said earlier. And I think that is because we adapted our strategy because the need for in-formation was enormous […] Also, it naturally arises a need out there afterwards with what we should do with it [information], and how we should relate to what has happened or is happening. And then comes the advice and it is our primary task in many contexts to come up with advice"
Initial Event		
Uncertainty Reduction Establishment	Case reports, information resources (infographics, videos, press release, press conference)	"In the beginning it was mostly about making people aware that we were having press conferences and to come with information that came out of those press conferences quite quickly afterwards. Primarily on Facebook and Twitter […]"

Theme Category	Definition	Examples
Initial Event		
Self-efficacy Establishment	Specific preventions, responsibility of the public	"It [social media] has its background in our strategy, it is about how we work with social media, about why we are there. And it is not unique that we say that we are there [on social media] to have a dialogue with our followers, but of course you also have the need to come out with information from the organization. But we think we're actually trying to have that dialogue. It is the only channel we have where we are in direct contact with our target groups"
Reassurance Establishment	Remove uncertainty, giving emotional support/understanding	"We [NIPH] have tried to talk with an everyday language and enrich it with feelings, con-sideration, meet the fact that people are sitting there and maybe are scared, frustrated, angry, anxious, need to be motivated to follow our advice, like it's many emotional needs out there […] We have to come with concrete and pro-fessional messages with advice and rules with a dash of empathy and emotions. Also, because these messages usually are received better than if we say "you have to keep that in mind" all the time"
Maintenance		
Uncertainty Reduction Facilitation	Understanding of background factors, like for instance specific groups like minorities	"On social media, we are active on Face-book, where we have four interdisciplinary departments as we call it, or profiles, where two are managed by the communications department. Then there are two others that are thematic: hand hygiene and migration health, where FHI is the sender, but it is the respective subject departments dedicated person who manages it"
Self-efficacy Facilitation	How and where to get more information	"[…] on Facebook we also talk a lot with the population there, […] and think that it does not matter to have long posts if there is a lot of information we want to communicate. We want to avoid people being dependent on clicking on a website to find out everything they need to know, everything that is important, so we want the posts to live by themselves and that the posts can be shared. And that everyone who sees that post, gets every advice they need. By this they don't miss out on 10 advice because they did not bother to click in"

Theme Category	Definition	Examples
Maintenance		
Reassurance Facilitation	Feedback from public, corrections of misunderstandings/misinformation	"We have also addressed misinformation in our strategy. If we for example see wrong statements or incorrect facts in the comments field, with links to more or less good websites, we should not leave it unanswered […] misleading claims or factual errors or that people have misunderstood happens too, then we go and correct it"
Vaccine	Information about vaccine, how, what, when	"And also, we have only had text posts lately when it comes to the corona vaccine. We really thought that Facebook in a way would, that their algorithms would give us an advantage that we had a picture or something visual, but it does not seem that they [Facebook] care much about it in their algorithms when the posts are perceived as relevant […] We are not used to post information that does not contain any visuals. But now it [communication] has gone so fast, and the most important thing is what is written, so we have just done it"

In the following chapter an analysis of the qualitative content analysis will be provided as well as for the qualitative semi-structured interview.

5.   Analysis

In this chapter, aspects from the qualitative content analysis as well as content from the qualitative semi-structured interview will be analyzed. This was done together with the provided literature review and theory chosen for this research, the CERC model. The chapter will be divided between the social media platforms, Twitter and Facebook, being able to grasp the possible differences and similarities. Each platform will further be divided in the two months selected in this study; March and December 2020. The content will be analyzed by each stage according to the CERC model: pre-crisis, initial event and maintenance.

The data from Twitter and Facebook will be presented together with the interview to show the connection on the NIPH's thought strategy. However, being able to grasp the interview as a whole, an analysis of the interview will be provided as well. Quotes from the interview and Twitter/Facebook posts was translated from Norwegian to English. Looking at table 3 and 4 you will see examples of the codebook from both research approaches. If an expression or word cannot be translated, an equivalent word is placed in brackets.

5.1 The NIPH's Communication on Twitter

In this part an analysis of the NIPH's communication from Twitter will be addressed. Firstly, there will be an emphasis on Twitter in March 2020 followed by December 2020. Relevant aspects from the interview will also be specified together with the content.

5.1.1   Twitter March 2020

As addressed earlier, the NIPH posted 54 Twitter posts in March 2020. This month was chosen since WHO called for action for all countries when it came to prevent and decrease the spread of the virus (WHO, n.d.b.). Thus, March was considered as a starting point in this research.

When asked about the communication during the pandemic the interviewee from the NIPH addressed:

> We [*NIPH*] don't know when the crisis will end, but we know that it's long-lasting and that it will require a lot from us. According to this, we will adapt our information, and the crisis itself means that we have to communicate in a different way than we would if the crisis would end tomorrow (Interviewee, the NIPH).

In the period of March 2020, the majority of the posts was within the phase's *pre-crisis* (28 posts) and *initial event* (32 posts) of the CERC model.

Pre-crisis

In the stage *pre-crisis*, when it comes to risk messages, it mostly contained general information about COVID-19 regarding symptoms but also recommendations towards the public. Reynolds and Seeger (2007) explained this stage as important to communicate and educate the public and the response community in this case, Norwegian citizens. The focus should be on providing general understanding of the situation, but also testing different communication techniques to know what methods could be efficient for later use (Reynolds & Seeger, 2007). One tweet categorized as a *warning message* was:

> We have today received confirmation that another 8 people have tested positive for coronavirus (incl. 7 which was confirmed earlier today). None of them are seriously ill or hospitalized. A total of 33 people is infected with #koronavirus #coronavirus in Norway [URL][4] (Folkehelseinstituttet, 2020, a).

This tweet provided general information about the state of people infected with the virus as well as how it affected their health. Moreover, asking how the NIPH communicated warning messages the interviewee said:

> In our plans, Twitter is the preferred social media channel for that [*warning messages*]. We [*NIPH*] have a concrete action card, as we call it, in our crisis communication plan, where the person who is first at work must within one hour post a message, a short informative message,

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[4] [URL] indicates that a link was provided in the tweet.

saying we are working on the case and that we will come with more information […] (Interviewee, the NIPH).

An example of a tweet that was common under the category *risk message* was "updated figures on the number of people infected with #coronavirus in Norway: [URL]" (Folkehelseinstituttet, 2020, b). This was one of several tweets that provided a public understanding of the risks specifically towards Norway.

In the *pre-crisis* stage, the last theme category was *preparation messages*. Here, communication about changes in the public's behavior, like recommendations or ways of asking for feedback to gain knowledge on how to communicate in later stages, was in focus. An example of changes of the public's behavior within this stage could for instance be specific measurements like "FHI[5] has today updated travel advice for four areas in northern Italy, as well as for South Korea and Iran. Read more here: [URL]" (Folkehelseinstituttet, 2020, d). Regarding communication in a disaster situation, it is of importance to be aware of the receivers to be able to target messages for efficient communication. Asking for feedback could therefore provide information of value for the sender (Reynolds & Seeger, 2007). One example:

> Hello. There is a great commitment about the handling of #coronavirus, and we understand there are many questions and input here on Twitter, thank you for that. Continue to give us input, we listen and read, but unfortunately, we do not have time to answer everyone directly. Regards FHI (Folkehelseinstituttet, 2020, c).

Answering questions from the public was a part of their strategy but changed due to the increased number of messages: "If you get 500 Twitter messages with relevant questions every day in addition to the other platforms, then one, two, three or five social media guards does not have a chance to answer them all" (Interviewee, the NIPH). Still, the literature indicated that being responsive and asking questions as well as building a strong relationship is important for an efficient government health risk communication (Kim & Kreps, 2020).

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[5] FHI (Folkehelseinstituttet) is the Norwegian abbreviation of the NIPH.

Initial Event

As mentioned, the majority of the Twitter posts from the NIPH in March was in the stage *initial event*. Here, communication, according to the CERC model, should contain rapid communication to the public and affected groups to establish an understanding of the disaster with being empathetic and use tools to reduce uncertainty (Reynolds & Seeger, 2007). This was communicated by the NIPH through information such as reports, infographics or press conferences to reduce uncertainty or increase self-efficacy:

> Especially now in the last year we [*NIPH*] have used more infographics. I have seen that there has been a need to convey our messages in a different way than just plain text in a post, and also in a different format than just a picture or a video (Interviewee, the NIPH).

One example of *uncertainty reduction establishment* that was occurring frequently on Twitter was announcements of press conferences "hi, to journalists Monday. Regarding #koronavirus #coronavirus: We have a press conference in Lovisenberggata 8 at 18-19 today, with the opportunity for individual interviews. Welcome!" (Folkehelseinstituttet, 2020, e). The NIPH used Twitter as a platform announcing to the press but also announce to the audience that more information was to come:

> In the beginning it was mostly about making people aware that we were having press conferences and to come with information that came out of those press conferences quite quickly afterwards. Primarily on Facebook and Twitter […] (Interviewee, the NIPH).

Messages that could reduce uncertainty regarding the fast test of COVID-19 was also an example of *uncertainty reduction establishment*:

> We encourage caution when using #fasttests for #koronavirus. They will be able to give false negative results early in the course of the disease. - It is important to emphasize that these tests cannot be used to rule out covid-19, says chief physician Bakken Kran: [URL] (Folkehelseinstituttet, 2020, f).

The NIPH's communication on Twitter regarding establishment of *self-efficacy* was about specific preventions and responsibility of the public. An example could be: "today's updated figures, expanded list of areas with widespread infection and strengthened recommendations

on quarantine: [URL]" (Folkehelseinstituttet, 2020, g). New recommendations towards the public were made where the responsibility was on the public to follow them. Moreover, *reassurance establishment* had its focus on decreasing uncertainty and giving emotional support:

> Today at 12.00 outside Uranienborghjemmet in @Oslokommune (@Oslomunicipality)❤️ With singing and clapping from employees and residents of the nursing home, we want to send a big thank you to you in socially critical jobs that now take a tough grip for all of us. #clapfornorway #coronavoluntarywork #coronaNorway (Folkehelseinstituttet, 2020, h).

The importance of positive messages was mentioned as important by Guidry et al. (2017) where too much focus on negative information could affect the public in an unwanted way as a health risk already has an undesirable impact.

> We [*NIPH*] have tried to talk with an everyday language and enrich it with feelings, consideration, meet the fact that people are sitting there and maybe are scared, frustrated, angry, anxious, need to be motivated to follow our advice, like it's many emotional needs out there […] We have to come with concrete and professional messages with advice and rules with a dash of empathy and emotions. Also, because these messages usually are received better than if we say "you have to keep that in mind" all the time (Interviewee, the NIPH).

Maintenance

Maintenance was the last stage of the CERC model that was in focus. The communication was towards the public and affected groups to facilitate understanding of the risk, feedback from public and corrections of misunderstandings as well as communication on where the public can get information (Reynolds & Seeger, 2007). The focus in this stage was on communication regarding facilitation on *uncertainty reduction, self-efficacy, reassurance* and *vaccine*. There were least posts in this stage in March 2020. Messages focused on *uncertainty reduction facilitation* contained amongst other things, understanding of background factors:

> We have two info films in different languages about the coronavirus. One with advice, and one about quarantine and isolation. They are now available in several languages; Dari, Pashto, Polish, Punjabi, Sorani, Swahili, Urdu and Vietnamese. They are sorted into two playlists on our Youtube channel (folkehelseinstituttet, 2020, i).

Addressing disaster communication towards minorities and smaller communities, it is important to be clear with the communication and to be inclusive (Spialek & Houston, 2019; Eisenman et al., 2007; Vraga & Jacobsen, 2020).

Kim and Kreps (2020) mentioned that keeping the public updated on the latest information is important for efficient government health risk communication. Examples of *self-efficacy facilitation* were for instance, posts about information on where and how the public could get more information.

> Hey you. Many have probably gotten it already, but many of our pages on [URL] have been updated during the day. What has been done on the pages, and when, you will find information about at the bottom of each page. #koronavirus #coronavirus (Folkehelseinstituttet, 2020, j).

Reassurance facilitation was for instance communication regarding feedback from the public and corrections of eventual misunderstandings: ".@Legemiddelinfo warns against junk websites that sell protective equipment and medicines against #koronaviruset: [URL] #coronanorway" (Folkehelseinstituttet, 2020, k). The NIPH addressed to the public on false information about medicine against the virus. Vraga and Jacobsen (2020) highlighted misinformation as something that is important to manage regarding uncertainty. Asking about their management of misinformation the interviewee said:

> We have also addressed misinformation in our strategy. If we for example see wrong statements or incorrect facts in the comments field, with links to more or less good websites, we should not leave it unanswered […] misleading claims or factual errors or that people have misunderstood happens too, then we go and correct it (Interviewee, the NIPH).

Lastly, the theme category *vaccine* was not of relevance in the month of March 2020. In the following paragraphs the tweets from December 2020 will be addressed.

5.1.2   Twitter December 2020

There were 11 Twitter posts in December 2020 excluding posts that was not about COVID-19. The same theme categories and definitions from the posts in March 2020 were used for the Tweets of December 2020. Looking at the NIPH's communication in December 2020,

could give an indication of whether there has been a change of communication. Asking about the changes of the NIPH's strategy the interviewee stated:

> It [*communication*] was mostly news coverage in the beginning, not as much on advice as I said earlier. And I think that is because we adapted our strategy because the need for information was enormous […] Also, it naturally arises a need out there afterwards with what we should do with it [*information*], and how we should relate to what has happened or is happening. And then comes the advice and it is our primary task in many contexts to come up with advice (Interviewee, the NIPH).

Pre-crisis

Looking at the CERC model, *pre-crisis* is the first stage. Malecki et al. (2020) mentioned the disadvantage with social media when it comes to miscommunication as well as the importance of using social media to provide important information. Looking at the stage pre-crisis, one example was the fast test where there was given general information towards the public:

> New quick test saves time when resolving outbreaks. The use of rapid tests when there is an outbreak or suspected corona outbreak can help municipalities to quickly detect people who are infected, isolate them and get started early with infection detection. [URL] (Folkehelseinstituttet, 2020, l).

Moreover, there were tweets specifically towards Norway that was coded as *warning message* like:

> In November, there has been a high spread of infection in several areas in the country. This has led to increased covid-19 cases also in schools and kindergartens. In most places where cases have been confirmed, there is no further spread of infection [URL] (Folkehelseinstituttet, 2020, m).

Another example within *preparation message* was about their new initiative – an app "Smittestopp" where the audience was advised to use the app to let people know they are infected with corona (change in the public's behavior). Likewise, they can see who else is affected "Say hello to the new #Smittestopp👋It can let you and others know if you have been exposed to infection and is one of several measures that can help limit the spread of infection. Availa-

ble in the AppStore and Google Play" (Folkehelseinstituttet, 2020, n). However, this was not stated as a recommendation but merely a measurement people can take, which is why this also could be a part of the *initial event* stage within the theme category *self-efficacy establishment* due to the responsibility of the public to use the app. Spialek and Houston (2019) emphasized forming resilient societies where the society needs to take action together which could form a sense of belonging.

Initial Event

The stage *Initial Event* had a focus on *uncertainty reduction establishment* in the NIPH's communication when it came to press conferences but also when there was a debate about the pandemic in Scandinavia:

> Who is most powerful regarding Health Norway? How has the pandemic been in Scandinavia? What is happening on the covid vaccine front, and what about the role of the municipal chief physician in the pandemic? @DagensMedisin holds a debate on power and #COVID19, and several people from FHI are participating! [URL] (Folkehelseinstituttet, 2020, o).

By informing about this debate, NIPH communicated in a way that could reduce uncertainty towards the public. This aligns with Reynolds and Seeger (2007) regarding rapid communication and understanding of the crisis where important questions are taking into consideration.

When it comes to *self-efficacy establishment*, it was about specific preventions and responsibility of the public, however the only tweet in this category was their initiative about the app mentioned earlier (Folkehelseinstituttet, 2020, n). *Reassurance establishment* was focusing on removing uncertainty by for instance showing emotional support, an example of this could be a tweet regarding the Human Rights Day: "Human rights are absolutely crucial in the fight against covid-19. Both because the rights demand that we ensure life and health, and because it provide guidance on a balance against other human rights. #HumanRightsDay #standup4humanrights #StandUpForHumanRights" (Folkehelseinstituttet, 2020, p). Guidry et al. (2017) mentioned the importance of positive communication and being interactive for the audience to trust the source of communicating during crisis. Asking the interviewee about formulation of information during the pandemic the interviewee highlighted:

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It lays in our expectations that we will talk a lot about corona, if we are going to say something, we will say something about it [*COVID-19*]. At the same time, we have occasionally tried to include other themes within corona. It could be to make it more relevant because it also has a touch of Corona information, but it is initially about something else, like for example mental health (Interviewee, the NIPH).

Maintenance

Lastly *maintenance* included when the NIPH communicated understandings, support and feedback as well as corrections from eventual misunderstandings or rumors (Reynolds & Seeger, 2007). When it comes to *uncertainty reduction facilitation* it was about understanding of background factors like for instance minorities, however no posts were directly coded as such in December 2020. *Self-efficacy facilitation* was about how and where to get more information. Like *uncertainty reduction facilitation* there were no posts that were directly linked to this in December 2020.

Reassurance facilitation concerned corrections of misunderstandings but also feedback from the public: "The national public health survey from NIPH shows that seven out of ten - 73 percent - of the adult population say that it is very or fairly likely that they will take the corona vaccine [URL]" (Folkehelseinstituttet, 2020, q). Here, they communicated the results of the public's opinion about the vaccine against the virus.

Within *maintenance* an additional theme category *vaccine* was developed due to the new virus variants and the vaccine (WHO, n.d.b.). An example could be: "No matter where you end up in the vaccine queue, many people may be wondering how this effective vaccine development is possible at all? This film from the Norwegian Medicines Agency will for 90 seconds give you a quick introduction" (Folkehelseinstituttet, 2020, r). This tweet also included *uncertainty reduction establishment* due to the introduction movie to the development of the vaccine, where its effect could reduce uncertainty to the public. Another example is a post that includes *vaccine* and *warning messages* towards specific groups in Norway:

Today, the vaccine from BioNTech and Pfizer was given a conditional approval, and the first doses are expected to arrive soon. Initially, there will be vaccination on a small scale, and the elderly and sick are first in the vaccine queue. [URL] (Folkehelseinstituttet, 2020, s).

In the next part an analysis of the Facebook posts will be provided.

5.2 The NIPH's Communication on Facebook

Here, an analysis of the NIPH's communication from Facebook will be addressed. There will be an emphasis on Facebook posts from March 2020 followed by December 2020. As for the previous part, relevant aspects from the interview will be addressed.

5.2.1 Facebook March 2020

There were 12 Facebook posts concerning COVID-19 in March 2020. Several Facebook posts were coded in different theme categories where the majority of the posts were coded within stage *initial event* (7 posts). Asking about information on the NIPH's communication on Facebook the interviewee stated:

> On social media, we are active on Facebook, where we have four interdisciplinary departments as we call it, or profiles, where two are managed by the communications department. Then there are two others that are thematic: hand hygiene and migration health, where FHI is the sender, but it is the respective subject departments dedicated person who manages it (interviewee, the NIPH).

Pre-Crisis

Eriksson and Olsson (2016) mentioned that for Swedish citizens, Facebook was viewed as being more important than Twitter when it comes to crisis communication, since it was experienced as a platform to connect and get important information. Asking about the NIPH's strategy the interviewee stated:

> We have a strategy where we are very comfortable with not having a fixed number of posts we want to post, especially on Facebook and Instagram, to feel that it's relevant. We are comfortable with only posting when we feel it's useful and appropriate to those who follow us so that it's not perceived as "spam" or "unnecessary" (interviewee, the NIPH).

Regarding the statement mentioned above from the interviewee, Kim and Kreps (2020) emphasized in their study that transparency is important. Likewise, it was stated in previous literature that careful communication is of importance regarding different types of audiences that receive the messages (Ataguba & Ataguba, 2020; Liu & Kim, 2011). During the pre-

crisis stage there is a need for a consistent crisis and risk strategy to obtain the audience's trust and credibility (Reynolds & Seeger, 2007; Ataguba & Ataguba, 2020; Guidry et al., 2017). Looking at the first theme category *pre-crisis* an example of *risk message* could be:

> Coronavirus: new phase, new measures. We are now at the beginning of the phase where we see infection in the population that we cannot trace, therefore it is now necessary to introduce new measures. In addition to good hand hygiene and good coughing habits that are important in all phases of an epidemic, we now recommend further measures to reduce infection from person to person in society, and thus protect the vulnerable groups. Our recommendations and advice are continuously updated at [URL] Therefore always remember to check the current recommendations and advice […] (Folkehelseinstituttet, 2020, t).

This Facebook status update provided general information about the pandemic and why new measurements were made. Moreover, looking at specific information towards Norway within the theme category *warning message* this is an example:

> On March 12, the number of corona infections has risen to 621, an increase of 163 in the last 24 hours. We are in a phase of the epidemic where we cannot trace the path of infection of everyone who has been infected. This makes the situation serious. In addition to the infection-reducing measures that have already been introduced, the measures are now being stepped up sharply. See [URL] for more information about the various measures that the Norwegian Directorate of Health has adopted today (Folkehelseinstituttet, 2020, u).

Here the NIPH addressed the importance of risk towards Norway with specific numbers when it came to corona infections as well as the seriousness of the situation. Looking at the CERC model and the literature, this stage should contain communication to amongst other things, provide information about the certain amount of risk the public is under (Reynolds & seeger, 2007; Ataguba & Ataguba, 2020).

Preparation messages refers to communication for changing the public's behavior like for instance communication about different recommendations or feedback from the audience (Reynolds & Seeger, 2007; Lwin, et. al, 2018). Similarly, most of the posts in this category concerned recommendation that the public needed to take into consideration:

> Here are 8 steps to protect yourself and others from #koronavirus #COVID19 #coronavirus 1. Wash your hands often and thoroughly with soap and water 2. Avoid touching your face. The virus can be transmitted to the body through the mouth, eyes and nose […] (Folkehelseinstituttet, 2020, v).

Initial Event

When it comes to the next stage in the CERC model, *initial event,* the majority of the posts within the stage *uncertainty reduction establishment* were different types of information resources used to reduce uncertainty like for instance their self-reporting solution:

> Do you have a cough, fever, heavy breathing or other respiratory infection symptoms that *may* be due to coronavirus? Almost 24,000 have already reported to us through the new self-reporting solution [URL] after it was launched on helsenorge.no earlier today👍 Thank you to those of you who help us get an overview of the situation in Norway! (Folkehelseinstituttet, 2020, w).

This post could additionally be an example of the theme category *self-efficacy establishment* since it is the public's responsibility to use the self-reporting solution and the NIPH encouragement with using the solution. Other examples of *self-efficacy establishment* contained information about different restrictions.

Regarding *reassurance establishment,* one example was when NIPH provided support on the International Happiness Day:

> Distance is the new closeness. It is challenging for each of us. We do not know how long this state of emergency will last, until we can eventually move back to the society as we know it. Today, March 20, is the International Happiness Day. Funny to think about, when we know that many people feel uneasy and insecure. Good moments are perhaps extra important right now. It could make the difficult days brighter and easier, they prevent stress and ailments. Happiness is not just about the highlights of life, but about experiencing joy, meaning, satisfaction, peace and security in everyday life. How can we all have good moments in the state of emergency we are in now? Here are five great tips for pure everyday enjoyment: […] (Folkehelseinstituttet, 2020, x).

This post emphasized positivity, which as mentioned, is of importance regarding health disaster communication during crisis which can provide encouragement in a tough time (Guidry et al. 2017).

Maintenance

Within the last stage *maintenance*, an example of *uncertainty reduction facilitation* regarding specific groups and background factors could be:

> Increased physical distance between people slows down the spread of covid-19, but it can be difficult to get an overview of the advice we give to different groups. We have therefore prepared the overview below in an attempt to simplify and clarify. There are various pieces of advice for the general population, risk groups, those who have been quarantined, those who have a respiratory infection without proven covid-19 and those who have been placed in home isolation with proven coronavirus disease. Download the entire overview in PDF, with links to the relevant pages at FHI [URL] (Folkehelseinstituttet, 2020, y).

Gathered information for different groups was provided which can reduce uncertainty towards the public as well as facilitate important information (Reynolds & Seeger, 2007; Spialek & Houston, 2019; Eisenman et al., 2007).

The stage *self-efficacy facilitation* provided information about where and how to get more information. This could also be seen in the post mentioned above where a separate link was mentioned to get more information (e.g., Folkehelseinstituttet, 2020, v; Folkehelseinstituttet, 2020, t). Regarding *reassurance facilitation* it consisted of feedback from public or corrections of eventual misunderstandings. The NIPH did not address any misunderstanding in this stage, but an example when asking for feedback could be "Do you know anyone who needs information about home quarantine or isolation in a language other than Norwegian? Tell them about this page👍" (Folkehelseinstituttet, 2020, z). As mentioned earlier, the NIPH have different Facebook pages, and it is the migration page that was shared in this post. Therefore, the post could be a part of *uncertainty reduction facilitation* because of communication towards helping minorities to find and understand different information (Reynolds & Seeger, 2007; Eisenman et al, 2007; Spialek & Houston, 2019). Lastly the theme category *vaccine* was not of relevance in March 2020.

In the next part Facebook posts from December 2020 will be analyzed.

5.2.2   *Facebook December 2020*

In the month December 2020 there were 11 Facebook posts that were categorized according to the CERC model excluding posts that did not include content about COVID-19. The posts were coded in the same manner as the previous content for Twitter and Facebook.

> […] On Facebook we also talk a lot with the population there, […] and think that it does not matter to have long posts if there is a lot of information we want to communicate. We want to avoid people being dependent on clicking on a website to find out everything they need to know, everything that is important, so we want the posts to live by themselves and that the posts can be shared. And that everyone who sees that post, gets every advice they need. By this they don't miss out on 10 advice because they did not bother to click in (interviewee, the NIPH).

Pre-crisis

Regarding the stage *pre crisis* and *risk communication* one example could be:

> Today, the vaccine from BioNTech and Pfizer received a conditional approval, and the first doses are expected to arrive soon. Firstly, there will be vaccination on a small scale, and it is the oldest and the sick who are first in the vaccine queue. Everyone who is offered a vaccine will be contacted by the municipality, and information about where and when the vaccination begins in your municipality can be found on your municipality's website. The vaccine is voluntary and free. Read more about the vaccine and who is prioritized at [URL]. These corona vaccines have been tested in large studies where several thousand people have received the vaccine. The studies have been carried out in the same way as for other vaccines, but the observation time is shorter. The drug authorities have given the vaccine a conditional approval. This means that there is enough data to assess that the benefit of the vaccine far outweighs the risk, but that the vaccine manufacturer must continue its studies and continuously provide the pharmaceutical authorities with data that will eventually be available. More info can be found at [URL] (Folkehelseinstituttet, 2020, aa).

This post contained general information about the approval of vaccines. This could serve as an example of important information that should be provided in the first stage of a crisis (Malecki et al., 2020). It could however also be coded as *warning message* since it provided

specific information about the vaccine towards Norway; that it is free and who will get it first (Reynolds & Seeger, 2007; Folkehelseinstituttet, 2020, aa).

One example of the third theme category within the stage *pre-crisis, preparation message,* could be the app:

> Say hello to new Smittestopp👋the app can notify you and others if you have been exposed to infection and is one of several measures that can help limit the spread of infection. Infection control is available in 📲 AppStore [URL] 📲 GooglePlay [URL]. (Folkehelseinstituttet, 2020, ab).

Looking at the CERC model, this app could change the behavior of the public if the public choose to use it, meaning it could serve as a recommendation to the public (Reynolds & Seeger, 2007).

<u>Initial event</u>

Moving on to the stage *initial event,* one example of *uncertainty reduction establishment* could be when the NIPH announced a press conference that was live streamed on Facebook (Folkehelseinstituttet, 2020, ac). Additionally, the infection stop app could also be a part of this category since it also could reduce uncertainty regarding infection (Folkehelseinstituttet, 2020, ab). Likewise, the app could be a part of *self-efficacy establishment* since it is the public's responsibility to use the app for it to have the desired effect.

Another example of *self-efficacy establishment* could be "Join in bringing our old days back❤️ Download Smittestopp. The app is voluntary to use, and one of several measures that can help to control the spread of infection." (Folkehelseinstituttet, 2020, ac). Here the app was addressed yet again, and the NIPH encouraged people to use it while addressing to get back to "normal life".

Regarding *reassurance establishment*, one example could be: "Now there are probably many who are feeling lonely. Do you know anyone who would be happy if you reached out?🥰" (Folkehelseinstituttet, 2020, ad). NIPH presented emotional support towards the public and understanding during the hard times of the pandemic. Likewise, a video was attached that

could enhance the emotional feeling. People tend to use social media under disasters for emotional support (Liu et al., 2011). This is also of relevance since the post encourage people to comment.

Maintenance

When it comes to the last stage, *maintenance,* neither *uncertainty reduction facilitation* nor *reassurance facilitation* was of relevance in December 2020. However, the vaccine was developed and was communicated:

> And also, we have only had text posts lately when it comes to the corona vaccine. We really thought that Facebook in a way would, that their algorithms would give us an advantage that we had a picture or something visual, but it does not seem that they [*Facebook*] care much about it in their algorithms when the posts are perceived as relevant […] We are not used to post information that does not contain any visuals. But now it [*communication*] has gone so fast, and the most important thing is what is written, so we have just done it (Interviewee, the NIPH).

There were posts that both contained communication about the *vaccine,* but also *self-efficacy facilitation* like for instance the post mentioned earlier about the vaccine (Folkehelseinstituttet, 2020, aa). The post contained information on how and where to get information as well as the vaccine in general. Another example could be a post of an informational video about the corona vaccine:

> Want to know more about the corona vaccines? Who is offered corona vaccine first, and why: [URL]. Regardless of where you end up in the vaccine queue, many people may be wondering how this effective vaccine development is possible at all? This video from the Norwegian Medicines Agency will give you a quick introduction for 90 seconds. Read more about the corona vaccines here [URL] (Folkehelseinstituttet, 2020, ae).

The mentioned Facebook post provided information about the vaccine and could additionally reduce uncertainty towards the public which belongs to the stage *initial event* and theme category *uncertainty reduction establishment* (Reynolds & Seeger, 2007).

In the next part the semi-structured interview as a whole will be analyzed with the CERC model.

5.3 The NIPH's Strategy on Social Media

In this part, an analysis of the semi-structured interview will be provided where aspects that could not directly be connected to the content analysis, will be focused on. The interview was coded by means of the CERC model. However, the interview goes beyond the posts and provides a strategic point of view that could be important answering the research questions about the NIPH's applied strategy.

Regarding the stage *pre crisis,* Reynolds and Seeger (2007) addressed that this stage not only consisted of communicating recommendations but also to develop messages, testing messages for efficient communication, as well as cooperation with other associations and organizations. By this, a strategy is used, tested and developed in this stage. Regarding the NIPH's intention of their use of social media the interviewee said:

> It [*social media*] has its background in our strategy, it is about how we work with social media, about why we are there. And it is not unique that we say that we are there [*on social media*] to have a dialogue with our followers, but of course you also have the need to come out with information from the organization. But we think we're actually trying to have that dialogue. It is the only channel we have where we are in direct contact with our target groups (Interviewee, the NIPH).

Concerning crisis communication and preparation, the NIPH has a strategy where they have 10 focus areas, where the main part is to be "the open institute" where social media is integrated (Interviewee, the NIPH). Asking about their use of research in the field of crisis communication the interviewee stated:

> Within research, we follow both the communication field and the field of media studies. We follow it, read articles about it and thus keep us up to date. We have also used it [*research*] when we prepare plans. But to what extent, I do not know, it will probably be more of a regular update within the fields (Interviewee, the NIPH).

As mentioned, regarding the *pre-crisis* stage, Ataguba and Ataguba (2020) stated that it is critical to have a crisis and risk strategy. However, asking if NIPH has a specific strategy concerning communication towards COVID-19 the interviewee stated:

No, not really a special communication strategy for only that [*COVID-19*]. The same communication principles apply to us. And I think the fact that we try to be open, accessible and present on social media is the bottom line in everything we do and our main motive (Interviewee, the NIPH).

Moreover, when asking about how the NIPH prepared the public for COVID-19 the interviewee stated:

I wish I could say we were on Facebook or on Instagram from day 1 since we knew about the virus, but we were not. It was not because we didn't want to, as I said, we have a goal of being available, fast and open about everything. But we probably had our first Facebook post about corona on February 26 and by then we had already been working with corona for a while. [...] it was not like we did not want to say anything about it, although we also had a desire to be quicker on social media and noticed that many thought it was a bit strange that we did not talk about it, but talked about other things, which is very understandable (Interviewee, the NIPH).

The interviewee explained that they chose to not post anything about the virus without knowing that their health professionals could provide answers the public were seeking, so they waited till they had more resources: "So, we were a bit slower than we wanted, but it was not possible due to work pressure elsewhere in the organization" (Interviewee, the NIPH). Perry and Lindell (2003) mentioned that when it came to emergency management it was important to react to a threat in a manner that could minimize the consequences for the public. Asking about if their strategy changed during the pandemic the interviewee answered:

[...] We had to go from having one guard or one dedicated person every day who tracks the comment fields during the working hours to have an additional media guard. Because we usually have a media guard 24/7 who tracks the comment fields in the evening who takes away what is not appropriate to be there. But then we broke the guidelines, so we had to move away from it and have a social media guard scheduled 24/7 and we have not had that before, and it was needed. So, we have been working day, night and weekend since February last year because of that (Interviewee, the NIPH).

The NIPH's social media strategy is evaluated minimum once a year and their strategy is valid for two years at a time, but the recent plan was out of date (November 2020) due to prioritization of COVID-19 (Interviewee, the NIPH). Collaboration between different organizations

or sectors was mentioned by the NIPH where the interviewee emphasized cooperation with for instance the drug authority and the health authority in Norway (sharing posts, getting inspiration) but not as commercial actors (Interviewee, the NIPH).

When it came to testing messages or asking for feedback the NIPH expressed that they tracked the response from the public on their message by for instance looking at statistics and how the audience engaged with the posts. Moreover, they provided feedback to the next person taking over their social media shift to discuss what the challenge are, how the communication should be by for instance looking at reactions of the posts (Interviewee, the NIPH).

Lastly, asking on how they communicate on Facebook and Twitter and if there are any differences, they indeed communicate differently, and it was seldom they formulated themselves in the same way on Twitter as on Facebook regarding the formulation of the message or the amount:

> Twitter has its few characters there everyone is forced to be concise. But on Facebook we also talk a lot with the population there, so we have the tone that I mentioned earlier [*everyday language*] and think that it does not matter if we have longer posts if there is a lot of information we want to share (Interviewee, the NIPH).

In the next chapter a discussion of the analysis will be provided where essential factors will be gathered and deliberated.

6.   Discussion & Conclusion

Here, a discussion regarding the provided analysis from both the qualitative content analysis as well as the semi-structured interview will be given to be able to answer the research questions. First, aspects from the literature review as well as the theory will be discussed together with the analysis. Next, a suggestion for developing the CERC model will be provided after reflection of this study. Lastly, a conclusion will be provided with limitations and suggestions for further research.

6.1 Discussion

As exposed in the analysis, the majority of the posts were on Twitter in March 2020 (54 posts) in comparison with Twitter in December 2020 (11 posts). Whilst Facebook in March 2020 and December 2020 did not have any notifying differences regarding the amount of the posts (12 and 11 posts). Reynolds and Seeger's (2007) CERC model consists of several stages and this study focused on stage 1-3 (*pre-crisis, initial event* and *maintenance*). However, looking at the posts, the content did not necessarily follow the stages in a linear fashion, which the CERC model could be more definite.

This study's focus is on an ongoing long-lasting pandemic, it could be a motive to why the stages appeared overlapping. It could be challenging to define when for example the *pre-crisis* stage is over, when for instance new versions of the virus appeared. Consequently, it could be possible that a disaster goes from *initial crisis* then move 'backwards' towards *pre-crisis*. By this, during a specific disaster, the communication could follow the stages of the CERC model, but when there are developments, such as the new variants of the COVID-19 virus, the communication could revert back to the *pre-crisis* stage. One disaster can therefore have several 'extended' disasters or crises in different stages simultaneously.

Regarding consistency, looking at the analysis, the NIPH did not post the same posts on Twitter as on Facebook. This could not only be seen on the differences on the number of posts (65 on Twitter and 23 on Facebook) that were posted, but also regarding the content. Twitter was

used mostly for *uncertainty reduction establishment* when it came to for instance announcing press conferences. Facebook merely consisted of providing different recommendations which was a part of *preparation messages* and *self-efficacy establishment*. Guidry et al., (2017) mentioned that organizations that do not communicate the same to different social media platforms could lead to miscommunication. Facebook also had longer status updates than Twitter that could be due to the character limit. However, it means that the Facebook posts included more information than Twitter. Additionally, there are different types of users for the social media platforms Facebook and Twitter which could lead to different information to different people (Haro-de-Rosario et al., 2018).

The NIPH communicated most frequently on Twitter, especially March 2020 which aligns with the need for rapid communication in the beginning of crisis (Reynolds & Seeger, 2007). In December 2020 there were only 11 posts on Twitter which indicates a change of strategy. Looking at the CERC model, there is not a need for as much communication in the later stages (Reynolds & Seeger, 2007). However, for Facebook there were no change of strategy regarding the number of posts.

The provided analysis of the semi-structured interview indicated that the NIPH indeed had a strategy for crisis situations, but they did not have one specifically for a health disaster communication like COVID-19. Previous research emphasized having a clear disaster communication plan where social media clearly is a part of it to prevent misinformation, information overload and to obtain trust (e.g., Malecki et al., 2020; Vraga & Jacobsen, 2020; Ataguba & Ataguba 2020). It could be anticipated that the NIPH would have a more efficient strategy if they created one specifically for COVID-19. It is also noteworthy that the NIPH did not communicate about COVID-19 first time hearing about it due to uncertainty (Interviewee, the NIPH). This could influence their amount of trust and could affect their reputation (Guidry et al., 2017).

6.2 Suggestions for the CERC Model

The current research is one of few that has been conducted with the focus on applying the CERC model on social media especially with the focus on a pandemic (Lwin et al., 2018). For instance, one study contained a quantitative content analysis of Facebook posts of different health authorities in Singapore that were analyzed with the CERC model. They mentioned

that the CERC model should be developed further and also tested towards longer health disasters (Lwin et al., 2018). Hence, it was of relevance to analyze the NIPH's strategy while using the CERC model regarding their communication on Twitter and Facebook. Still, further adaptation could be made.

As the content analysis indicated, the stages in the CERC model were used, but in practice the NIPH's communication did not follow the stages chronically. This was observed due to the characteristics in the theme categories that were going across the different stages. For instance, the differences were not many between *warning*- and *risk* messages and it could be argued to be under one theme.

Lwin et al.'s (2018) results regarding the study on Facebook concerning the Zika virus, also indicated changes towards the model. People appreciated information that was directed towards the public rather than mentioning collaborations with other agencies and, as the CERC model suggests. Lwin et al. (2018) mentioned that instead of collaborations with other agencies, the CERC model could focus on the connection with the audience of social media. Likewise, the NIPH mentioned other organizations in their social media posts, however, this was for providing more information towards the public rather than enhancing collaborations. Thus, the suggested development from Lwin et al. (2018) was of relevance in this study as well. The NIPH addressed that they read all their comments on social media and align their strategy towards this. Since social media is a platform for many-to-many communication where the public actively comments and shares the posts, it could also be argued that the characteristics of both *preparation messages* and *reassurance facilitation* could have more specific theme categories towards social media regarding asking/receiving feedback. Hence, it could be used as an important indicator to analyze if a strategy on social media is answering the needs of the public throughout the disaster.

Looking at stage 3, *maintenance,* it was merely concerning *uncertainty reduction* on how to get more information, *facilitation of reassurance* as well as information about the *vaccine.* Since the characteristic *vaccine* was created due to its relevance in December 2020, it also included warning and risk messages to for instance risk groups. This indicated that a disaster does not necessarily follow the CERC steps chronically. Since the vaccine was a new invention, it was a new type of information that was needed to be communicated by the NIPH. Then, their communication went 'backwards' even though *vaccine* was coded in stage 3. The

model could therefore be adapted to suit disasters that could emerge within an already existing health disaster.

Disasters like COVID-19 are unpredictable and long-lasting. Ways of communicating should therefore continuously be analyzed and adjusted, not only in the *pre-crisis* stage as the CERC model suggests, but throughout the disaster. The CERC model could likewise be developed where the stages are more suitable towards long-lasting pandemics especially for social media, where the stages could have more specific actions towards this. It could additionally be beneficial to analyze the communication frequently in all stages to know how to respond to the audience's needs. On social media, this could be done by for instance looking at feedback from the audience throughout the disaster.

6.3 Conclusion

Looking at previous research, there was lacking research on longer pandemics with a focus on social media and disaster health communication. The focus was merely on response in pre- and post- disaster communication which shows the relevance of this study (e.g., Le Roux, 2013; Liu & Kim, 2011). This research analyzed the phenomenon *health disaster communication*, where the NIPH was used as a case study with the focus on the ongoing pandemic COVID-19. This was done by conducting a qualitative content analysis of their Twitter and Facebook posts as well as conducting a semi-structured interview with one person from the NIPH. The analysis gave an overview of the content of the NIPH's Twitter and Facebook pages during the months of March 2020 and December 2020 and to what degree they applied the CERC model towards their health disaster communication.

Firstly, looking at RQ1 it stated:

> In what way do the Norwegian Institute of Public Health apply the CERC model in their COVID-19 health disaster communication strategy on Facebook and Twitter?

Looking at the analysis, the CERC model is reflected in their communication strategy as well as their content on Twitter and Facebook. However, the stages of the model were not followed chronically. Likewise, the NIPH did not have the same number of posts on Twitter and Facebook. This can also be seen in their strategy where they are posting on their platforms

when they feel like they want to share content. As seen in the given literature review, this could prevent information overload; however, it could also lead to lack of information. A specific strategy for COVID-19 for their different platforms could make their information more consistent and easier to keep track of their health communication.

Secondly, RQ2 in this study stated:

> In what way did the health disaster communication from the Norwegian Institute of Public Health evolve during the course of the COVID-19 pandemic?

This research also focused on if the NIPH's communication on Twitter and Facebook had changed during the development of the pandemic by looking at the difference between March 2020 and December 2020. Regarding the communication on Twitter there was a difference at the amount of information in March 2020 versus December 2020, however, there was no notifying differences regarding their communication on Facebook. This also could be an example of inconsistency, but also that their strategy indeed changed during the development of the pandemic as the CERC model implies, especially for Twitter.

To sum, this research highlighted health disaster communication, using theory to see how it has been applied by the NIPH. Since social media is continuously growing, it would be highly relevant to continuously adapt the model to a more efficient health disaster communication on social media.

6.4 Limitations and Suggestions for Further Research

In the domain of strategic communication this research contributes on how to communicate during a health disaster on social media. This is of relevance as of the needs for more research in this fields.

However, this study includes limitations. As highlighted in the methodology, conducting a content analysis with one researcher could be biased due to the interpretation of one person. Still, the semi-structured interview provided more validation and added a strategic viewpoint towards the content analysis. Another factor worth mentioning is that we are currently under the pandemic which means that this is a new unknown phenomenon which made it difficult to

research with implementing the CERC model as theory. This is due to the stages of the theory for after crises that are not yet relevant. Using only one theory could as well provide a limited viewpoint for the research and may not represent the complexity of the pandemic.

Further research could focus on implementing the CERC model, including all stages, towards COVID-19 to investigate if the model's stages still are not 'followed' chronically and to see if there could be made further suggestions. As well, it could be interesting to compare several health authorities from several countries, to see if there are differences/similarities due to different approaches of COVID-19. Regarding the social media platforms in this study, it could also be fascinating to focus on other platforms like Instagram, since this platform mainly focuses on visuals.

The importance of continuously developing and adapting communication theories towards health disasters on social media is highly relevant. The need for theories from a managerial point of view is needed to be able to contain an efficient health disaster communication towards the public. Specifically, the CERC model could be further modified and developed to different social media platforms. Accordingly, it could result in better preparations and actions for future health disasters.

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Appendices

Appendix 1: Informed Consent Form

Informed Consent Form:

Health Disaster Communication on Facebook and Twitter

(for Master Thesis)

This consent form is part of the process required for ethical treatment of participants in research. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about the research process or procedures, please ask.

Invitation to Participate

I intend to investigate how the National Institute of Public Health in Norway communicated regarding the COVID-19 pandemic on Facebook and Twitter. The plan is to conduct a content analysis of the Twitter and Facebook posts in March and December 2020 together with theory in the field of crisis and disaster communication.

Research Purpose

This research looks at the applied health disaster communication strategy regarding COVID-19.

Research Method

If you decide to participate, I will invite you to participate in a semi-structured interview. For example, you will be asked: "How did the communication department react to this situation in the beginning of the outbreak?" or "Can you please tell me about the organization's strategic plan on social media when it comes to crisis?" Your answers will be reported together with data from a content analysis from Facebook and Twitter.

Benefit

By participating, you will contribute to a better understanding of digital health disaster communication during a pandemic. You will have access to my report after completion.

Confidentiality - Anonymity - Security

If you decide to participate, your identity as a participant in this study, and any other personal information gathered about you during the study, will be kept strictly confidential and will never be made public. All data containing personal information from which you could be identified will be deleted after the data analysis. Electronic data will be password protected. When the study is completed, all data containing personal information will be destroyed. The published results of the study will contain only data from which no individual participant can be identified.

Voluntary participation

You are being asked to make a voluntary decision whether or not to participate in this study. If there is any part of the information that is not clear, please feel free to ask for clarifications. If you decide not to participate, or if you later decide to discontinue your participation, your decision will not affect your present or future relations with the researcher or Lund University. Upon request, the results will be made available to you. You will always be free to discontinue participation at any time, and all data collected up to that time as a result of your partial participation will be destroyed without being used in the study. If you decide to participate, please provide your signature as indicated below.

What Your Signature Means

Your signature on this Consent Form indicates that you have understood to your satisfaction the information regarding participation in this research project. Your continued participation should be informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

_____

Signature of Participant   Date

_____

Signature of Investigator   Date

Contact Information:

Amanda Bjerva: am1761bj-s@student.lu.se

Appendix 2: Interview Guide

Introduction:

- Explanation of the topic → health disaster communication strategy on Facebook and Twitter during COVID-19
- Clarify any questions and ensure anonymity
- Encourage respondent to answer in detail with as much information as possible
- Ask for permission to record, and then start recording

Fundamental questions about the organization:

- What is your background in the department?
- Can you describe in as much detail as possible on what the communication department consist of?
- How many is in charge of social media?

Backup:

- How many people are working in the communication department?
- What are the different roles in the communication department?
- How many people are working on social media communication?

Content:

Communication department

Social media:

- Which platforms are used for communication?
- How often do you post on social media on regular basis?
- Could you please say something about what type information you post on the different platforms on social media?
   - o Follow up: Facebook and Twitter?
   - o Follow up: Why do you post certain types of information for the mentioned platforms?

Digital Communication and crisis:

- How do you prepare for a crisis when it comes to communication on social media?
- Can you please tell me about the organization's strategic plan on social media when it comes to crisis?
    - o Follow up: how is it monitored?
- Is the plan getting evaluated on regular basis?
    - o Follow up: do you for instance have crisis simulations to test if the plan works in practice?
- How do you communicate warnings on social media?
    - o Follow up: what is the focus in the beginning of a crisis?
- Do you communicate differently depending on how a crisis develop?
    - o Follow up: focus on different types of information regarding the pace of the crisis? Why?
- Do you focus on certain groups when communicating during a crisis?
    - o Follow up: why/why not?
- Do you connect with experts/health experts when there is a crisis regarding communication on social media? Why, why not?

Content:

Crisis communication, digital communication, strategy on social media

I would now like to introduce another topic, COVID-19…

Digital Health Disaster Communication:
COVID-19:

- What is the purpose of the information on social media during the COVID-19 pandemic?
    - Follow up: who are the target audience, what is the main message, why?
- Do you have a communication strategy for social media, specifically for communication about health outbreaks such as COVID-19?
    - Follow up: do you view COVID-19 as a disaster?
    - Follow up: has the strategy been revised during the pandemic? Why?
    - Follow up: How is the strategic plan being monitored?
- Do you use communication research when it comes to how to communicate on social media specifically during COVID-19?
- Can you please give me a detailed description of the organization's first actions on social media when hearing about COVID-19?
    - Follow up: how did you prepare the public for the crisis?
- How did the communication department react to this situation in the beginning of the outbreak?
    - Follow up: immediate response to the crisis, what information did you communicate first on what platforms and why?
- Has the strategy on social media changed during the development of the pandemic?
    - Follow up: how and why do you think it has changed?
    - Follow up: has the target group changed?
- How do you communicate to reduce the uncertainty of the public?
    - Follow up: focus on specific platforms/specific type of information?

- Do you focus your communication on specific groups while communicating about COVID-19? Why?
- Could you please say something more about the framing/formulation of the messages during the pandemic?
    - Follow up: do you formulate information in a specific way on specific platforms? Why?
- How do you communicate to avoid misinformation?
    - Follow up: avoid information overload?
- In what way do you align the communication on social media with the other platforms the organization is on?
    - Follow up: why is it important that information and messages are aligned or not?
- Do you communicate more on social media during COVID-19 than prior the pandemic?
    - Follow up: why do you think that?
- How do you make sure that the public gets the information they need during COVID-19?
    - Follow up: how do you check the response to the messages
- Have you experienced a similar situation to COVID-19?
    - Follow up: have you used earlier experiences?

Backup:
- What was the strategy in the beginning of the crisis compared to now?
- What is the goal of the communication?
    - Different goals per platform regarding type of information?
- Is the focus on other information than COVID-19 now during the pandemic? Why?
- Have you used earlier learnings from another crisis when it comes to COVID-19?

Content:

Digital health disaster communication, strategy on social media during COVID-19

Conclusion

- **Is there anything else you want to share with me regarding the topic?**
- **Do you have any questions?**

Thank you for the interview.