Master Project

# Storying crisis: Exploring and comparing digital health stories around COVID-19 pandemic policies across countries

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## Background information

Stories are increasingly seen not just as depicters but also as creators of change (Essebo, 2022). Crisis such as the COVID-19 pandemic generate many stories in an effort to both communicate health information and also cope with the ongoing crisis and its health and psychological implications. Stories help people to find meaning in crisis and also influence beliefs and behaviors (Essebo, 2022). Thus, stories were not just a coping mechanism for individuals to deal with their everyday experiences of the pandemic-related health measures, but also constituted a powerful tool for public health stakeholders, health researchers, journalists or influencers to deliver health messages. While some stories were effective in motivating individuals to adhere to health policies (e.g., physical distancing, vaccination) and build trust within communities, others were used to spread false information, fear and mistrust (e.g., stories about Bill Gates implanting people with a microchip) (Essebo, 2022).

Digital stories are stories told using digital media (e.g., usually a 2-5 min audio-videoclip combining photos with voiceover narration) (Lambert, 2013). Digital stories are used to empower individuals to reflect on their experiences of a phenomenon (e.g., the pandemic, lockdowns, vaccination) (Martinez-Borda et al., 2021). Generally, the goals of using digital stories in public health are to create counter narratives, to translate knowledge, to reach vulnerable groups, to build communities and preserve cultural heritage, among others (Lohr et

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al., 2022; de Jager et al., 2017). During the Covid-19 pandemic, several digital stories were created by different stake holders (e.g., public health institutions, journalists, influencers) and communicated online to inform and motivate people to adhere to health policies. Existing research showed that storytelling was used during the pandemic to communicate technical information and to reveal injustices that happened during the crisis (Sweta & Chen, 2021). However, there is still little information about what kind of digital stories were communicated by different sources and how they differ between countries, as well as the responses they generated. Additionally, much needs to be learned about the effects of digital stories for public health messaging. Since human behaviour drives the impact of any crises, it will be important to understand, whether creating digital stories for public health builds trust and positively impacts the behaviour of individuals and communities.

**Aims and research questions**

The present project aims to explore digital stories that were created by public health stakeholders (e.g., National Public Health Institutes (NPHIs), World Health Organisation (WHO), journalists (e.g., popular online newspapers) and influencers (e.g., scientists, politicians, health practitioners, other popular influencers) concerning relevant health policies during the COVID-19 pandemic such as lockdowns and vaccination. Second, the project aims to compare these stories between countries and identify similarities and differences. Because of time and resource limitations, the planned study will focus on German (Germany, Austria, Switzerland) and some English-speaking countries across all continents (USA, UK, Australia, India, South Africa).

*Research questions* include:

What are the digital health stories that were communicated regarding lockdown[1] and vaccination? Were these stories positively (e.g., using optimistic messages) or negatively

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[1] For research purposes lockdown will include any limitations on personal freedoms, movement and travel, and include mask wearing

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framed (e.g., using fear appeals messages)? Did they target cognitions or emotions? Who were the target groups of the stories?

How do the stories spread by public health stakeholders differ from the ones spread by journalists and influencers?

What stories were most popular across countries?

**Methods**

For answering the above-mentioned research questions, we will apply a combination of qualitative and quantitative data analysis methods.

*Data collection*: data on health messages and digital stories will be collected from three relevant sources, namely:
   a. the websites of public health stakeholders (e.g., health ministry, WHO)
   b. popular online newspapers
   c. health influencers on social media (e.g., Reddit, Instagram, blogs).

We will focus on posts related to lockdowns[2] and vaccination.

*Preprocessing*: Data has to be cleaned and prepared by removing duplicates, irrelevant content, and noise.

*Topic modelling*: Topic modelling is used to identify hidden semantic patterns illustrated by a text corpus and automatically identify topics that exist inside it, for instance related to the COVID-19 pandemic (Golos et al., 2023). We will apply popular topic modelling analysis tools such as Latent Semantic Analysis (LSA) and Latent Dirichlet Allocation (LDA) or the LDA topic modeling algorithm provided by the Differential Language Analysis ToolKit (DLATK) Mallet interface as recommended elsewhere (Golos et al., 2023; Azizi et al., 2023; Schwarz et al., 2017).

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For the present project, key topics will be identified within the collected data with the help of qualitative methods such as content analysis. Results can show what stories were created by different sources (e.g., public health stakeholders, journalists, influencers) and in what format (e.g., scientific text, podcast, video etc.). Also, findings may show the most popular content of the digital stories, as well as how these are framed (positive/negative messages, cognitive/emotional messages) and who was the potential target audience. Differences between countries will be identified and interpreted in the context of regional public health policies.

*Sentiment analysis*: Sentiment analysis or opinion mining (SAOM) represents a domain that automates extracting public opinions or thoughts that are expressed in a written language (text) across social media, blogs, news etc. (Ainapure et al., 2023). The aim of sentiment analysis is to evaluate individuals' personal experiences, opinions, emotions related to a phenomenon, service, organization or product (Ainapure et al., 2023). For the present project, sentiments related to lockdown and vaccination stories will be classified using deep learning and lexicon-based techniques (Ainapure et al., 2023). The lexicon-based approach will be used to classify the potential polarity of the tweets by using the NRCLex and Vader tools (Ainapure et al., 2023). Tools such as HuggingFace (2024) can leverage state-of-the-art Large Neural network to conduct efficient sentiment analysis. The sentiments will be quantified as positive, negative or neutral. Results will show what sentiments related to lockdown and vaccination were transmitted at different timepoints in different countries by different sources (e.g., press, health influencers).

    a. *Network analysis*: during the pandemic some communicators were more influential than others, and communication networks were often automatically formed around digital stories about health. This step would help understand the information flow, how information is spread and who the key opinion leaders and influential groups are. Also, it will help to understand how health information may sometimes become misinformation if false facts are spread through digital stories. Moreover, it will help identify the most influential health communicators during the pandemic. For the network analysis we will use Networkx (2024).

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      b. ***Temporal analysis***: the goal of temporal analysis is to track the volume of health messages mentioning lockdown or vaccination over time and evaluate them as the pandemic evolved. The data will be evaluated over time to identify trends in digital stories as well as changes in public sentiments or behavior related to these stories. This step can help identify specific shifts in attitudes and behaviors during different phases of the pandemic.

**Ethical issues:**

Since no experimental study or data manipulation will be performed, but only a secondary analysis of existing publicly available online data, not ethical issues are foreseen, similar to existing research in the field (see Pilgrim & Bohnet-Joschko, 2019). When conducting out research, we will comply with DSGVO guidelines.

**Expected Outcomes**

This project will help understand how public health messaging during the COVID-19 pandemic was shaped by the creation of different digital stories concerning lockdowns and vaccination. In addition, the project is expected to highlight which digital stories were most popular at different timepoints of the pandemic and who were the most relevant creators of digital stories about health in different countries. The results are also expected to inform the creation of effective digital stories about health during a crisis by evaluating which stories are likely to increase or damage the trust of the general public. Furthermore, the project can generate further research questions for MA thesis and provide ideas for formulating public global health policies and health communication interventions.

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