

Social Media and Communication in Times of Public Health Crisis: Analysis of COVID-19 YouTube Vlog activities in the sharing of patient experience and information[☆]

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ABSTRACT

This study analyzes the content of YouTube Vlog videos created by patients of Coronavirus disease 2019 ("COVID-19") in South Korea and viewer comments on those videos. As this new infectious disease started to sweep the world in late 2019 and early 2020, the public started facing fear and uncertainty stemming from the lack of sufficient and accurate information about the virus. At the same time, as COVID-19 patients in South Korea were treated in isolation to prevent the spread of the virus, the patients themselves were experiencing anxiety and exclusion from the society. During this period, there was an increase in YouTube Vlog videos created by the patients in which they shared their experiences going through the treatment and recovery processes. To understand how these YouTube Vlog videos were being used by the patients to connect with the society and seek support in a state of isolation and anxiety, this study conducted a qualitative multi-case analysis of three sample YouTube Vlog video channels to analyze their content, as well as a lexicon-based sentiment analysis of viewer comments to understand the experiences and reactions of viewers. The patients' YouTube Vlog videos showed that they shared similar stages of progress, despite each emphasizing a different main theme. Overall, the tone of the viewer comments became increasingly positive over time, although with some variance among different patient cases and stages. The results confirmed that Vlogs of patients played a significant role in reducing the uncertainty around COVID-19 and strengthening social support for the patients. The findings of this study can improve an understanding of the psychological and behavioral aspects of patient experience in isolated treatment and the impact of shared communication among members of society in times of crisis.

☞ keyword : COVID-19, Vlog, YouTube, Case Study, lexicon-based sentiment analysis

1. Introduction

Since the outbreak of COVID-19 in late 2019, the world has observed unprecedented tragedies and social chaos, including healthcare collapse, city lockdown, economic paralysis, as well as various social and psychological issues such as anxiety, hatred, victim blaming, and isolation. It

took a long time for medical communities to figure out the routes of transmission, treatment of symptoms, and ultimately, vaccination against the virus. During that period, people felt the need for communication to survive, and YouTube emerged as an alternative source of information (or misinformation) and social support (or conflict).

This study explored how YouTube has been utilized in the era of a pandemic disease for both the patients and the members of the society at large, particularly in South Korea. For that purpose, first, this study analyzed the content of YouTube Vlog videos uploaded by the patients who were diagnosed with COVID-19 and were receiving isolated treatment. Then, it examined the comments by viewers of these Vlog videos. The samples for this study were selected among the YouTube Vlog videos uploaded by COVID-19 patients at the early stage of the pandemic, when medical and social anxiety caused by this new infectious disease was

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especially high due to the lack of information.

At the early stage of the pandemic, the South Korean government decided to treat serious patients in hospitals and non-serious patients in quarantine treatment facilities. To varying degrees, the patients suffered not only physical pain and discomfort due to the disease itself, but also feelings of anxiety from social isolation and guilt about contributing to limitations in treatment space. They were also concerned about negative stigma that COVID-19 patients are immoral or careless people. Nevertheless, as they called themselves 'coming out' with the disease, the patients voluntarily shared their experiences and feelings, as well as first-hand accounts from the quarantine treatment facilities, via their YouTube Vlogs.

This study started with the question about what the patients wanted to achieve through their Vlog channels. The 'illness narrative' provided by patients battling various diseases has previously drawn attention in the medical field, but the high uncertainty and anxiety about this new infectious disease further raised additional social issues. Therefore, this study examined the question of what the patients communicated through their Vlog videos and what their viewers experienced through their viewing activities. The findings of this study will contribute to the understanding of social communication for information and support among members of the society during a crisis, and to the establishment of social strategies against infectious diseases.

2. Literature Review

2.1 COVID-19, Uncertainty, and Social Anxiety

New infectious diseases such as COVID-19 cause greater social fear and anxiety due to the lack of information, uncertainty and unpredictable continuity. Studies of patients during the outbreak of new infectious diseases such as SARS and MERS in the past have shown that patients suffered problems such as depression and anxiety as well as physical pain[1]. Previous studies found that patients of COVID-19 also faced mental health problems such as insomnia, poor attention and concentration, anxiety, depression, confusion, and suicidal thoughts, as well as

loneliness and frustration due to psychological isolation[2].

Such problems are largely augmented by the uncertainty of infectious diseases. Uncertainty is defined as 'a cognitive state that occurs when the characteristics or outlines of an event are obscure or too complex, when there is not enough information about the event, or when the outcome is unclear[3].' It has been argued that the uncertainty about a disease can be a significant variable that affects the entire process of treatment and recovery. Further, as members of the society are not provided with sufficient information during the outbreak of new infectious diseases, especially at the early stages, the uncertainty can even lead to a broader level of anxiety among the public.

Members of a society may adopt various strategies that they perceive to be advantageous to survive and to overcome social anxiety, including discrimination and hatred strategy[4]. Historically, rumors about infectious diseases often made the public turn its fear and anger towards the socially underprivileged and marginalized groups, resulting in resentment towards the infected people rather than the infectious bacteria or virus[5]. Uncertainty about COVID-19 has also led to hatred and discrimination of those who were initially infected[6]. Such psychological uncertainty and anxiety, as well as social discrimination and hatred caused by it, can not only negatively affect patients' treatment, but also interfere with a reasonable understanding of infectious diseases in the society.

2.2 COVID-19 and Social Networking

Previous studies have argued that objective or subjective social isolation is closely related to poor physical health (e.g., infection, disease, premature death, etc.) or mental health (e.g., depression, cognitive decline, etc.)[7-8]. On the other hand, social support from medical staffs, families and friends can contribute to the recovery of patients' health in many ways, including through material support, emotional support and informational support[9]. Previous studies show that even online solidarity can overcome physical isolation and thus can be a significant factor in the treatment of individual patients.

It is noticeable that COVID-19 patients are using YouTube Vlogs as a way to secure social and emotional support while they are being isolated from the outside world.

Vlog, a combination of blog and video, is a form of communication in which creators provide video content of their lives with an emphasis on portraying reality. Unlike traditional media that conveys information unilaterally, Vlog communicates with its viewers, providing information and forming social relationships at the same time. Though there have been illness Vlog content in the past[10], COVID-19 patients' use of Vlog to seek their support group by sharing information about a newly identified infectious disease illustrates distinct characteristics from the general illness narratives.

Social networking and communication during the time of a public health crisis can not only help the recovery of patients by providing much needed social support, but also, in the case of a new infectious disease, serve as an important source of information[11]. Although YouTube and social media have often been criticized for being conduits of misinformation[12-13], since the traditional mass media is limited in its ability to provide certain types of information, YouTube can be an alternative, and sometimes effective, tool for information sharing and social interaction[14-15].

3. Research Questions and Method

3.1 Research Questions

Based on the literature review, the following research questions have been established. Research Question 1 explores the COVID-19 patients' communication via YouTube channels during the quarantine treatment, while Research Questions 2 and 3 examine the viewers' responses toward the YouTube content:

- RQ1: What experiences are the creators sharing through Vlog during their COVID-19 quarantine treatment?
- RQ2: What are the most frequently mentioned words in the comments on Vlog of COVID-19 patients?
- RQ3: What emotional reaction do viewers express through the comments on Vlog of COVID-19 patients?

3.2 Research Method

First, this study conducted a qualitative case analysis of

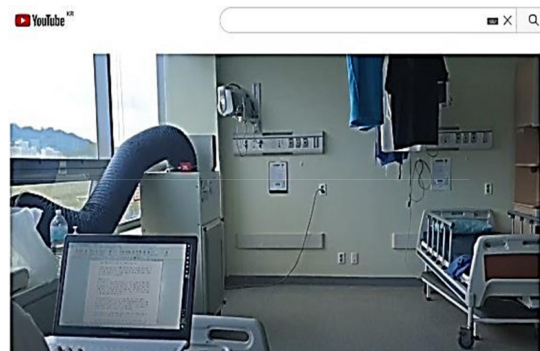
Vlog videos created by COVID-19 patients during and after their quarantine treatment. The cases were selected among YouTube channels uploaded by COVID-19 patients (online consent was obtained before research).

The data were collected from each YouTube channel during the month of June 2021. The three video creators selected for analysis were college students. Table 1 shows a summary of information about the analyzed channels.

(Table 1) Research Participants

	Gender/ Age	1 st Upload	No. of videos	Quaran-tine days
A	Male/ 20s	20.03.26	13	32
B	Male/ 20s	20.05.03	6	58
C	Female/ 20s	20.07.03	5	31

Case A was a 20-year-old male college student who uploaded 13 videos(a total of 97 minutes), including one post-video. He had 9,290 followers and continued his channel after being released from quarantine treatment, with content from travelling abroad. Case B was a 20-year-old male college student with 2,200 followers. He uploaded six videos(a total of 87 minutes) including one post-video during a relatively long quarantine treatment lasting 58 days. Case C was a female creator in her 20s who uploaded five videos(a total of 42 minutes) during her 31-day quarantine treatment. She stopped uploading videos after being released from treatment. Figure 1 shows a sample of patient's Vlog screen showing quarantine facility.



(Fig. 1) Sample of Vlog Screen

None of them were related to heretical religious groups or minority groups, who were being criticized as the first or major source of widespread outbreak of COVID-19 in South Korea. To address the three research questions, we analyzed the content of the Vlogs and the viewer comments.

To explore Research Question 1, this research conducted a qualitative case analysis. The researchers repeatedly watched the Vlog videos and extracted the differences and commonalities among the videos. The research findings were drawn from the themes and categories discovered through the ‘within case analysis’ and ‘between case analysis.’

Then, this study conducted a lexicon-based sentiment analysis of the viewer comments on each video. The sentiment analysis method has been mainly used for consumer response surveys online, but it can also be used for other social opinion analysis[16]. For this research, all comments collected from the three channels were extracted using R Studio’s text mining program, and the entire text in natural language, excluding punctuation marks, special characters, numbers, and foreign words, was classified into positive, negative, and neutral words based on the R-Studio Korean sentiment dictionary. A total of 4,268 comments for case A, 1,036 comments for case B, and 4,318 comments for case C were analyzed to examine the viewers’ responses.

4. Research Findings

4.1 Content of COVID-19 patients’ Vlog

For Research Question 1, we first analyzed the content of the videos uploaded by each quarantine to determine what experiences they shared in their Vlogs. The content of the videos shown in each case can be summarized as Table 2.

By analyzing the content of the Vlogs, this research was able to characterize the content of the Vlogs by quarantine phase. Across all three channels, during the first stage of the quarantine treatment, the video content commonly presented the patients’ purpose in ‘coming-out’ with COVID-19 and information about the treatment process. Then, during the second stage, the videos requested emotional support from the viewers. In the final third and fourth stages, the videos included appreciation for the medical staffs’ efforts and viewers’ support. All three channels also included videos

(Table 2) Summary of Vlog Contents by Cases

Stage	Case A	Case B	Case C
1	<ul style="list-style-type: none"> • Coming out with fear • Purpose of information sharing 	<ul style="list-style-type: none"> • Coming out with fear • Sharing serious pains • Depressive sentiment 	<ul style="list-style-type: none"> • Purpose of coming out • Self-cheering & mukbang
2	<ul style="list-style-type: none"> • Efforts to maintain positive attitude • Depression from test failure • Strategies for stress management 	<ul style="list-style-type: none"> • Asking for cheering & support • Finding strategies to overcome depression 	<ul style="list-style-type: none"> • Strong expression of depression
3	<ul style="list-style-type: none"> • Getting encouragement • Expectation for recovery 	<ul style="list-style-type: none"> • Risk warning for young public • Survival message 	<ul style="list-style-type: none"> • Discharge and returning to everyday life • Q&A on comments
4	<ul style="list-style-type: none"> • Discharge and new challenges 		

about their release from the quarantine treatment and answers to the questions or comments from the viewers.

Yet, the physical and psychological status of each patient’s case was very different, and the way the patients reacted to their disease and quarantine treatment situations varied greatly.

Case A, an exchange student from the United States, uploaded 13 video from the very early stage of the COVID-19 breakout, providing detailed information on the diagnosis and treatment process. He himself evaluated that, through his YouTube channel, he was able to not only obtain the support and encouragement needed to endure the treatment process by maintaining social connection with the outside world despite the physical isolation, but also contribute to sharing information that could reduce anxiety and uncertainty for the public.

Case B, also an exchange student from Turkey, uploaded 5 videos during the 58-day quarantine period and one video after being discharged. He experienced severe physical pain and depression due to the prolonged hospitalization. During the quarantine period, he sought prayers and psychological support through the Vlog videos. In a video posted after he was discharged, he communicated that he returned to everyday life in good health, although with some aftereffects such as hair loss.

Case C started her quarantine treatment later compared to Case A and B. By this time, some information about the treatment was already available to the public, so the effect of reducing uncertainty by information sharing was relatively low. Case C delivered entirely different messages at the same time, at times showing very unstable psychological status and depression, including videos in which she cried, and at other times engaging in relatively unserious ‘mukbang’, which involved the creator eating food that family members delivered. Although ‘mukbang’ drew critical comments among the viewers for being inappropriate, Case C mentioned that she wanted to show her parents that she was doing well in the quarantine situation.

A content analysis of the Vlogs revealed that, generally, each person disclosed that they had been diagnosed with COVID-19, appealed for social support amid challenges of quarantine, and expressed gratitude to their healthcare providers. On the other hand, each case conveyed its own strategies and methods for managing the fear and loneliness of quarantine through the Vlogs.

4.2 Viewers’ Responses on the Patients’ Vlog

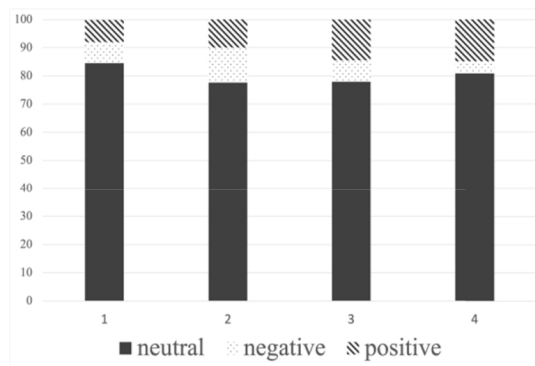
In order to examine the viewers’ responses to the patients’ Vlogs, this study analyzed the frequency of the words used in viewer comments and their sentiment for each case. For Case A, Table 3 shows the most frequently mentioned words by the viewers for each stage. Viewers’

(Table 3) Frequently Used Words in Comments (Case A)

	Top 10 Frequently Appeared Words
Stage 1	complete recovery(109) mask(84) video(74) people(70) thought(66) COVID(63) confirmed(61) Daejun(58) sincerely(57) test(47)
Stage 2	symptom(53) COVID(53) virus(41) flu(31) people(29) confirmed(29) sincerely(27) video(25) thought(24) treatment(23)
Stage 3	discharge(93) video(61) negative(44) result(31) Vlog(27) cheering(22) positive(18) sincerely(17) quarantine(14) thought(14)
Stage 4	discharge(127) video(66) health(50) complete recovery(46) hardship(40) cheering(40) quarantine(36) COVID(34) sincerely(32) celebration(28)

interest generally shifted from seeking information(for example, patient’s route of transmission) to encouragement and support. In addition to the words mentioned in Table 3, words that express appreciation for the medical staffs were also often mentioned.

Results of the lexicon-based sentiment analysis show that the comments on Vlog videos changed in a positive direction over the four stages in Case A’s videos, as shown in Figure 2. Considering that Case A’s videos started in the very early stage of the COVID-19 outbreak, the changes in the sentiment of comments implies that the video content played a role in decreasing anxiety and fear among the viewers.



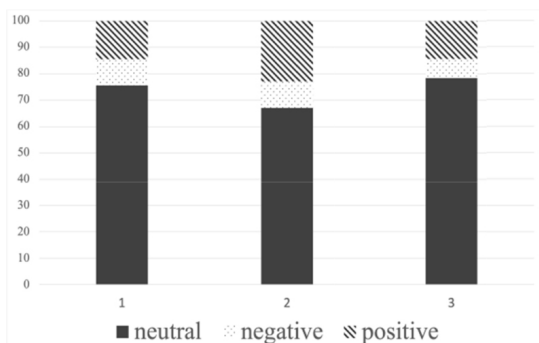
(Fig. 2) Sentiment Analysis (Case A)

For Case B, Table 4 shows the most frequently mentioned words by the viewers. Since Case B expressed difficulties from physical pain and psychological depression and asked for prayers, viewers’ showed their encouragement, especially by sending religious messages of support.

(Table 4) Frequently Used Words in Comments (Case B)

	Top 10 Frequently Appeared Words
Stage 1	video(44) health(30) cheering(27) appreciation(24) COVID(23) symptoms(22) hardship(21) sincerely(21) thought(20) discharge(20)
Stage 2	video(70) thought(60) discharge(53) cheering(49) COVID(44) sincerely(32) appreciation(30) test(29) health(25) mind(25)
Stage 3	health(13) people(9) God(9) salvation(8) Jesus(8) sports(8) mask(6) self(6) prayer(5) lucky(5)

Similarly, results of the lexicon-based sentiment analysis shown in Figure 3 show more positive comments than negative ones, since viewers expressed their encouragement for Case B who suffered severe symptoms and repeated delay of discharge from the quarantine.



(Fig. 3) Sentiment Analysis (Case B)

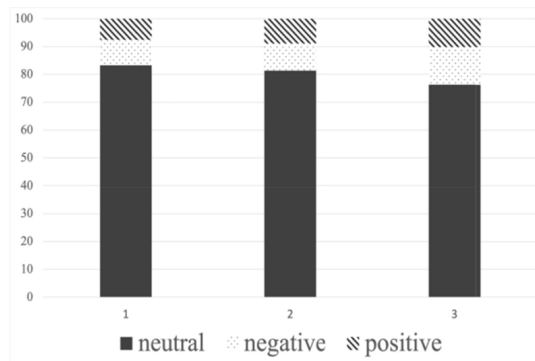
For Case C, Table 5 shows the most frequently mentioned words by the viewers. In addition to the words mentioned in the Table 5, words that express appreciation for the medical staffs were also often mentioned.

(Table 5) Frequently Used Words in Comments (Case C)

	Top 10 Frequently Appeared Words
Stage 1	Sincerely(104) confirmed(92) nurse(74) COVID(72) hardship(69) hospital(69) mask(63) medical staff(62) complete recovery(57) video(56)
Stage 2	confirmed patient(70) test(57) we(43) school(39) COVID(36) today(31) hospital(27) sincerely(23) video(22) mother(21)
Stage 3	test(124) video(90) confirmed(82) COVID(81) mask(74) sincerely(68) complete recovery(65) discharge(64) we(59) hardship(58)

In the case of Case C, there was a relatively high portion of negative comments as shown in Figure 4. Especially, some viewers criticized that a bright ‘mukbang’ was inappropriate in light of the serious social atmosphere. In addition, viewers also criticized that receiving food from outside of the quarantine medical facility was not considerate of the medical staff, who would have to

accommodate for the added work of arranging family visit and food delivery. Nevertheless, as the number of Vlog videos increased, the proportion of positive comments increased and that of negative comments decreased.



(Fig. 4) Sentiment Analysis (Case C)

5. Conclusions

Due to COVID-19, the world has experienced a new political, economic, social and cultural experience, offering a new perspective into the role and impact of new media communication. In times of a public health crisis such as this, the public experiences uncertainty and anxiety due to lack of information and misinformation. Furthermore, the nature of an infectious disease isolates the public and weakens their bonds for emotional and social support. Increase in depression caused by an infectious disease, often called ‘corona blue’ in the case of COVID-19, leads to stress in various ways, such that individuals have to come up with their own ways to deal with the uncontrollable situation[17]. However, digital media enables social interaction through information sharing using various media and channels. This possibility provides new implications for overcoming the ‘disease uncertainty’ and the resulting social exclusion and hatred of certain groups, which have been raised in previous studies.

To understand the impact of this new means of communication, this research conducted a qualitative ‘within case’ and ‘between case’ analysis of YouTube Vlog videos uploaded by three COVID-19 patients and a lexicon-based frequency and sentiment analysis of viewer comments to the

Vlog videos. The results showed that the patients' Vlog channels shared common stages of explaining their purpose of 'coming out' with COVID-19, describing the treatment and sharing information, and showing appreciation toward the medical staffs, as well as expressing the joy of being discharged from quarantine and going back to their everyday lives. On the other hand, each case showed its distinctive focus, such as religions messages or more cheerful 'mukbang.' In addition, the analysis of viewer comments showed that, as the Vlog video uploads progressed, viewers tended to express more positive responses, except for 'mukbang,' which viewers' perceived as causing nuisance to medical staffs taking care of the patients.

The findings of this research suggest that YouTube Vlog of COVID-19 patients have played a significant role in sharing information concerning the new infectious disease, which not only reduced the anxiety and uncertainty in the short term, but also strengthened social solidarity to overcome the pandemic disease. While it is necessary to carefully consider the impact of unrefined misinformation and disinformation on social media and YouTube, it is important to secure a way to utilize these media technologies appropriately and efficiently in times of public health crisis in ways that can encourage effective treatment of patients and social restoration of trust. Results of this study can contribute to the understanding of the psychological and behavioral aspects of infectious disease treatment, and the impact of communication among members of society during a public health crisis, such as COVID-19.

From an academic perspective, we hope that this research can enhance the understanding of information sharing and social support mechanism among members of the society through social media in times of crisis. In addition, we expect this research to contribute to the establishment of a patient management strategy for the medical field, as well as of public policy responding to infectious diseases such as COVID-19, that takes into consideration the emotional and social impact of treatment on patients. Despite these contributions, this study has the limitation of being an exploratory study analyzing a small number of cases, and an in-depth analysis into more diverse types of communication and specific contexts of viewer comments should be conducted through follow-up research.

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