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ORIGINAL RESEARCH

Comparison of COVID-19 and MERS Risk Communication in Korea: A Case Study of TV Public Service Advertisements

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Purpose: In recent years, the world has been under threat of novel infectious diseases such as Middle East respiratory syndrome (MERS) and coronavirus disease 2019 (COVID-19). Governmental risk communication plays a key role in overcoming the public health crises caused by the emergence of these infectious diseases. The purpose of this study was to identify the focus of Korean public service advertisements (PSAs) in response to the MERS and COVID-19 outbreaks, along with the differences between them.

Methods: A total of five MERS and 17 COVID-19 TV PSAs were analyzed using Lasswell's Sender, Message, Channel, Receiver, and Effect model and the responses of the Korean government were compared between the MERS and COVID-19 outbreaks.

Results: During the MERS outbreak, the Korean government failed to gain the public's trust through its PSAs. Despite its best efforts, it provided opaque and selective information on the crisis. Conversely, in the case of COVID-19, the Korean government has successfully worked to strengthen community awareness by supporting and encouraging the public.

Conclusion: Despite the Korean government's improved communication in the COVID-19 crisis, there has been an insufficient response to the needs of vulnerable groups that could be placed in at-risk situations as a result of domestic violence or mental health problems during outbreaks of novel infectious diseases that require aggressive management.

Keywords: community awareness, public health crisis, coronavirus disease, SARS-CoV-2

Plain Language Summary

This study investigated the focus of public service advertisements (PSAs) related to new infectious diseases, as well as how they differed during the recent outbreaks of two new infectious diseases in South Korea—Middle East respiratory syndrome (MERS) in 2015 and coronavirus disease 2019 (COVID-19) in 2020. The researchers evaluated a total of 22 TV PSAs: five for MERS and 17 for COVID-19. During the MERS outbreak, PSAs had three purposes: providing information, promoting public participation in the response, and supporting medical teams. For COVID-19, the PSAs had five purposes: providing information, promoting public participation in the response, supporting and encouraging the public to help fight the outbreak, supporting volunteers, and encouraging the consumption of goods. Moreover, in several cases, PSAs related to COVID-19 were designed to gain public trust in the government's response to the new infectious disease. An area of weakness in the government's management of the COVID-19 outbreak was the lack of an appropriate response to the needs of vulnerable members of the population, such as those with mental illness and victims of domestic violence.

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Introduction

Risk communication is the process of mutually exchanging information and opinions between individuals, organizations, and institutions to induce behavioral changes, which can mitigate hazards and the threats posed by them.[1] In a public health crisis caused by a novel infectious disease, effective governmental risk communication helps build trust with the public and reduces the time and risk entailed in decision-making.[2]

Currently, the world is experiencing a public health crisis due to the emergence of the coronavirus disease 2019 (COVID-19).[3] South Korea (hereafter, Korea) has demonstrated success in curbing the inflow and spread of COVID-19 through effective risk communication, a key strategy for fostering community participation.[4] However, in the public health crisis caused by Middle East respiratory syndrome (MERS), ineffective risk communication was cited as the greatest weakness in the government's response.[5,6] In that situation, the Korean government was evasive and cited inaccurate information in its risk communication, thereby failing to gain the public's trust.[5]

Beck[7] argued that the core of modern disaster management is communication. Effective communication can create public trust in the government, which, in turn, encourages information sharing and mutual cooperation between ministries and organizations in charge of the disaster.[8] Public service advertising is one of the main methods that a government uses to communicate with the public, and one of its primary goals is to enhance public awareness of vital social issues.[9] Consequently, public service advertisements (PSAs) serve as tools of persuasion to convince the public to change their beliefs, attitudes, and behaviors. Overall, TV advertisements have a greater influence than advertisements using other media as they are able to affect the public's language, behavior, ideology, and moral views[10] by targeting a wide range of socioeconomic groups.

Behavioral change through advertisements can be explained by the theory of planned behavior.[11] This theory states that the more positive the attitudes toward a behavior and social norm, the greater the perceived behavioral control and intention to execute the behavior, which will likely lead to performing the behavior.[11] Attitude refers to the degree of positive or negative evaluation of a specific behavior, or of the emotional state resulting from the behavior. Subjective norms refer to the perceptions of pressure from others, which determine whether to perform an action.[11] Perceived behavioral control refers to an individual's perception of an action's ease or difficulty of execution. If receivers are influenced by advertisements in terms of their attitudes toward a specific behavior, subjective norms, and perceived behavioral control, it can lead to behavioral changes.

Infectious diseases occur naturally, but they become pandemics within complex social, economic, technological, health, and political environments.[5] Therefore, communication with the public needs to reflect the physical, social, and cultural environments of the geographical area, including hospitals, affected by the pandemic. In addition, given that PSAs reflect a social context that includes social morality and ideology, identifying their key characteristics can provide insights into how the social context has been affected by the emergence of infectious diseases.

Lasswell,[12] who considered communication the process of delivering messages, developed a representative model for persuasive communication that emphasizes the aspects of communication that change depending on message content and media type. Lasswell divided the communication process into five elements: Sender, Message, Channel, Receiver, and Effect (SMCRE model). The Sender is the communicator who delivers the message. The Message is the information the sender wishes to deliver to the receiver. The Channel is the medium of message delivery. Receivers are the audience for the message, and the Effect is the Receiver's response to the message. This study analyzed the communication used in PSAs by the Korean government to respond to the MERS and COVID-19 outbreaks based on Lasswell's SMCRE model.

Materials and Methods

Design

This study involved a comparative analysis of PSAs aired by the government to address the MERS and COVID-19 outbreaks in Korea.

Data Collection

Data collection was conducted from March 11 to April 20, 2020. Two authors searched for MERS and COVID-19-related TV PSAs posted on YouTube and www.tvcf.co.kr, which can be used to search for advertisements worldwide. The searches were conducted for each infectious disease from the date the first case was confirmed, which was May 20, 2015,[13] and January 20, 2020,[14] for MERS and

COVID-19, respectively, to the present. The cases were subsequently combined and duplicate data were excluded, resulting in five MERS and 17 COVID-19-related PSAs.

Analysis Framework

Lasswell's[12] SMCRE model was used as the analytic framework for case studies of PSAs in response to the public health crises caused by MERS and COVID-19. Here, the Senders were the government and related ministries. The Message was the information the government intended to convey to the public, and it varied by purpose and content. As the Channel for PSAs can influence their meaning and effect, it was considered essential to clearly distinguish the types and characteristics of PSAs in response to the public health crises. The Receivers were the public. Lastly, the Effect included the various reactions of the public, such as a willingness to provide more information, an increased likelihood of desirable behaviors, and greater cooperation in overcoming crisis situations.

Data Analysis and Rigor

Prior to the analysis, each author reflected on their political affiliations and prejudices by writing about them in a journal to ensure that they would not influence the analysis. Subsequently, scripts were written for each PSA. Yin[15] devised an analytical technique for integrating multiple cases by creating a word table to present data from individual cases according to a homogeneous analytic framework. Researchers then use the table to examine the similarities and differences between cases. Using this approach, two researchers examined the PSAs along with the scripts multiple times and underlined keywords or wrote memos detailing their features. The researchers then reviewed the underlined content and memos to create a word table by filling in the words corresponding to Sender, Message, Channel, Receiver, and Effect for each PSA. Next, the researchers combined the analyzed tables used for the case analysis and reviewed and referenced their recorded political affiliations or prejudices. In addition, during the case analysis, the PSAs were reviewed individually to compare the researchers' opinions. Efforts were made to obtain consensus on areas where they disagreed through literature reviews and discussion. After completing the case analysis, the researchers re-watched the PSAs several times while comparing them to their analysis to further ensure the rigor of their work.[16] Finally, based on evidence that a panel of 3–10 experts is sufficient,[17] this study obtained guidance from and underwent validity evaluation by four expert panelists with experience of working on the front lines of both the MERS and COVID-19 outbreaks; these experts included a researcher with 12 years of experience at the Korea Disease Control and Prevention Agency, a nurse with 14 years of experience in the infectious disease control office at a university hospital, an intensive care unit nurse with 15 years of experience, and an emergency medical center nurse with 17 years of experience. Relevant materials were sent to the panelists, following which they were asked to assess the analysis of each advertisement on a 4-point Likert scale. Regarding the advertisements that were marked as inappropriate, the experts were asked for their opinions on how they should be modified. Contents with a content validity index of 0.8 or less were reviewed and revised through comprehensive discussion among the researchers. For example, the analysis of an advertisement for the COVID-19 response indicated that "sagacious public relief hospital" was a more glorified term than others used in the advertisements. Therefore, this phrase was revised to "public relief hospital."

Results

Public Service Advertising on MERS

The five PSAs related to the MERS response were produced in June 2015. Analysis of the advertisements revealed three types of messages (see Table 1): providing information, promoting public participation in the response, and supporting medical teams.

Providing Information

Three of the five PSAs were produced by the Korea Centers for Disease Control and Prevention and the Ministry of Health and Welfare for the purpose of information provision. One of the videos did not include information on where it was produced and its production agency could not be confirmed because it had been produced several years ago. These PSAs provided explanations of MERS and the public code of conduct regarding the disease by using mosaic-processed field response photos, and designed images. Also, the advertisements used screen captions and narration by voice actors to emphasize personal hygiene, wearing new masks in case of symptoms, prohibition of quarantined subjects from leaving their residence, and the limited occurrence of MERS to confined spaces such as hospitals.

Table 1 Public Service Advertising on MERS

Message	Public Service Advertising	Sender (Date)	Feature	Channel	Receiver	Expected Effect	CVI
Providing information	MERS handling tips	Unconfirmed (June 2015)	• Explains the MERS virus, route of infection, and code of conduct • Explains use of new masks and prohibition on leaving home by quarantine subjects • Describes virus transmission as a design image	• Mosaic-processed flat-field response photographs • Design image • Directed screen • Narration of voice actor • Screen caption	Korean public	Compliance with infection prevention rules	1
	Let us cope with MERS	Korea Centers for Disease Control and Prevention (June 2015)	• Explains the MERS virus, route of infection, and code of conduct	• Partial mosaic-processed flat-field response photographs • Narration of voice actor • Screen caption	Korean public	Preventing the spread of infection and compliance with infection prevention rules	1
	Knowing MERS (June 2015)	Ministry of Health and Welfare (June 2015)	• Explains the MERS virus, route of infection, and code of conduct • Recommends general mask use when symptoms occur, and includes information on the transmission of the virus in confined spaces such as hospitals	• Design image footage • Narration of voice actor • Screen caption	Korean public	Encouraging public trust and hope by promoting a positive image of medical staff	1
Promoting public participation in MERS response	MERS response campaign	Ministry of Culture, Sports, and Tourism, Ministry of Health and Welfare, Korean Broadcasting System (June 2015)	• Encourages citizens' participation in the response to the MERS outbreak and support for medical staff, patients, quarantined people, and their families.	• Field photos • Narration of voice actor • Screen caption	Korean public	Preventing the spread of infection and compliance with infection prevention rules	1
Supporting medical teams	Korea Medical Association's MERS-related public service campaign	Korea Medical Association, Korean Broadcasting System (June 2015)	• Supports and encourages medical staff	• Photographs of medical staff working in the field • Screen caption	Korean public	Preventing the spread of infection and compliance with infection prevention rules	1

Abbreviations: MERS, Middle East respiratory syndrome; CVI, content validity index.

Promoting Public Participation in the Response

One of the five PSAs was produced by the Ministry of Culture, Sports, and Tourism, the Ministry of Health and Welfare, and the Korean Broadcasting System to promote public participation in the MERS response. Unlike the three PSAs previously mentioned, it showed pictures of the MERS response that were not mosaic-processed and asked for the public's participation and support for medical staff, patients, quarantined people, and their families in responding to MERS through screen captions and the narration of a voice actor.

Medical Team Support

The last PSA was produced by the Korean Medical Association and Korean Broadcasting System to support medical staff working with patients with MERS in the field. It showed pictures of people responding to patients in the field and delivered messages of support and encouragement to the medical staff through screen captions.

Public Service Advertising on COVID-19

Of the 17 PSAs related to the COVID-19 response, two were produced in February 2020, eight in March 2020, and seven in April 2020. The analysis of the advertisements revealed five message types (see Table 2): supporting and encouraging the public, providing information, promoting public participation in the response, supporting volunteers, and encouraging the consumption of goods.

Supporting and Encouraging the Public

Ten of the 17 PSAs were designed to support and encourage the public. Five of them were produced in March 2020 and the other five in April 2020. There were no mosaic-processed screens in the 10 PSAs, each of which had individual characteristics and utilized different channels.

Among the PSAs produced in March 2020, "Overcoming crisis DNA" was produced by Gyeonggi-do. It encouraged the public by emphasizing the Korean people's resistance to crisis through screens showing historical events in which Koreans have overcome disaster. It also featured Helen Keller saying, "The world is full of pain, but also full of people who struggle to overcome the pain," as well as screen captions and narration by famous celebrities. "COVID-19-Let's overcome together" was produced by the Korean government. While showing photos of Koreans responding to COVID-19 in the field, it featured cheering and encouragement to overcome the difficulties associated with COVID-19 through the public's collective consideration, help, and cooperation, and featured messages from famous celebrities and screen captions. "A video letter from Pengsu about COVID-19: Everybody cheer up" was produced by the Korean government. Screen captions and a popular character, Pengsu, delivered an encouraging message to patients and medical staff. "COVID-19 we win" was produced by the Korea Fair Trade Commission. It conveyed positive responses from the press and messages of support for the public while showing a large number of post-it notes with cheerful messages on them, and promised to oversee the mask distribution process. Finally, "Korea, wonderland? What a strange country!" was produced by the Korean Culture and Information Service. It cheered and encouraged people to overcome COVID-19 together with a community consciousness, transparency of government systems, and leadership. The PSA showed screen captions, directed images, and actual photos of professional medical staff treating those with COVID-19 in familiar Seoul city, as well as videos related to overcoming major historical crises.

Among the PSAs produced in 2020 with the message of supporting and encouraging the public, "Overcoming COVID-19 PSA" was produced by Seongnam city. It encouraged citizens to overcome COVID-19 while taking advantage of the information technology and biotechnology-related companies in Seongnam-si through field photos, screen captions, and the narration of a voice actor. "Hidden heroes" was a PSA produced by the Korean Red Cross. While showing Red Cross volunteers serving the public, it used screen captions and the narration of a male voice actor to deliver the message that the organization will help boost morale. "We protect your daily life" was produced by the Ministry of National Defense. Showing photos of the Republic of Korea Army serving on the field, it used screen captions and celebrity narration to deliver the message that soldiers are working together to protect the daily lives of the Korean people. "Even though our life is hard, we shall live humanely" was produced by Gyeonggi-do. A famous celebrity appeared in a directed video to show the contrast between stagnant and lively images of the marketplace, and the message stated that Gyeonggi-do Province was providing basic income to all Gyeonggi-do residents to help them recover from the stagnant economy (a word with double meaning in Korean: the area near Seoul and the economic state) created by COVID-19. The message was delivered in a pleasant atmosphere through the narration of a celebrity and screen captions. "NH Nonghyup: Stay strong Korea! Together! Let's get it over it!" was produced by NH Nonghyup (National Agricultural Cooperative

Table 2 Public Service Advertising on COVID-19

Message	Public Service Advertising	Sender	Feature	Channel	Receiver	Expected Effect	CVI
Supporting volunteers	Thank you for all your hard work and dedication to protecting Korea	National Health Insurance Service (February 2020)	• Shows volunteers on the screen and makes viewers aware of their efforts	• Mosaic-processed field photos • Screen caption • Narration of voice actor	Korean public	Encouraging hope and people's active cooperation	1
Providing information	COVID-19 national prevention rules	KCDC (February 2020)	• Provides information on COVID-19 infection, prevention behavior rules, and countermeasures in case of suspected symptoms. Uses sign language and captions simultaneously with narration	• Design image footage • Narration of voice actor • Screen caption • Sign language	Korean public	Encouraging the public's trust and hope by promoting a positive image of medical staff	1
	Public relief hospital, where everyone is safe	Ministry of Health and Welfare (March 2020)	• Describes public relief hospitals	• Motion graphic design	Korean public	Encouraging hope and people's active cooperation	1
	Public relief hospital	Ministry of Health and Welfare (April 2020)	• Describes public relief hospitals • Creates a reenactment of a popular drama casting the actors of the drama as models and voice actors	• Directed dramatic situation • Graphic images	Korean public	Encouraging hope and people's active cooperation	0.5
Promoting public participation in COVID-19 response	Hold on! campaign (last golden time)	Seoul metropolitan government (March 2020)	• Provides guidance on behavioral rules, emphasizing that this is the last chance to prevent community spread	• Announcer narration • Screen showing the announcer speaking • Current pictures of COVID-19 • Design image • Screen caption	Seoul citizens	Compliance with infection prevention rules	1
	COVID-19 We can overcome it with the power of citizens	Incheon metropolitan city (March 2020)	• Reconstructs the case of an infected person who showed good consideration for others by following guidelines	• Directed dramatic situation • Screen showing actually written movement line and journal • Screen caption • Narration of voice actor	Incheon citizen	Encouraging hope	1

(*Continued*)

Table 2 (Continued).

Message	Public Service Advertising	Sender	Feature	Channel	Receiver	Expected Effect	CVI
Supporting and encouraging the public	Crisis overcoming DNA	Gyeonggi-do (March 2020)	• Emphasizes Koreans' national character as people who are strong in a crisis by using narration of celebrities and famous sayings	• Screen depicting the overcoming of various disasters • Famous saying (Helen Keller) • Screen caption • Celebrity narration	Gyeonggi Province residents	Encouraging hope and people's active cooperation	0.7
	COVID-19 Let us overcome together	Government of the Republic of Korea (March 2020)	• Provides encouragement for people to overcome difficulties and provide consideration, help, and cooperation to others through video messages from famous celebrities	• Video of cheering and encouragement from famous celebrities • Screen caption • Field photos	Korean public	Encouraging hope and people's active cooperation	1
	Video letter from Pengsu "COVID-19, everybody cheer up"	Government of the Republic of Korea (March 2020)	• Depicts a popular character brightly cheering for infected people and medical staff with buzzwords	• Video of cheering and encouragement from a popular character • Screen caption	Korean public	Encouraging hope and people's active cooperation	1
	COVID-19 We win	Fair Trade Commission (March 2020)	• Delivers press reports of positive responses and messages of support for the public and promises intensive inspection of the mask distribution process	• Footage of positive media reports concerning Korea • Post-it notes with messages of cheer	Korean public	Encouraging hope and people's active cooperation	1
	Korea, wonderland? What a strange country!	Korean Culture and Information Service (March 2020)	• Supports and encourages people to overcome COVID-19 together by showing events that demonstrate community consciousness, transparent systems, and leadership	• Directed image • Actual field photos • Familiar photos of Seoul city center • Screen caption • Video on overcoming major historical crises	Korean public	Encouraging hope and people's active cooperation	1

(*Continued*)

Table 2 (Continued).

Message	Public Service Advertising	Sender	Feature	Channel	Receiver	Expected Effect	CVI
	Overcoming COVID-19 Public service advertisement	Seongnam city (April 2020)	• Encourages people to overcome COVID-19 while taking advantage of the characteristics of Seongnam city where IT-related and bio-related companies are concentrated	• Field photos • Screen caption • Narration of voice actor	Seongnam citizen	Encouraging hope and people's active cooperation	1
	Hidden heroes	Korean Red Cross (April 2020)	• Shows actual service of Red Cross volunteers, demonstrating that they are working together to empower people	• People who are serving in the Red Cross • Screen caption • Narration of voice actor	Korean public	Inspiring public trust and hope by promoting a positive image of the Red Cross	1
	We protect your daily life	Ministry of National Defense (April 2020)	• Shows soldiers, demonstrating that they are serving together to protect the lives of the people	• Photos of the ROK military serving on the field • Screen caption • Celebrity narration	Korean public	Promoting a positive image of the Ministry of Defense to inspire public trust and hope	1
	Even though our life is hard, we shall live humanly	Gyeonggi-do (April 2020)	• Acts out a pleasant situational play intended to show that the government intends to provide basic income for COVID-19 disaster relief, which is paid to all Gyeonggi-do residents to help them recover from the stagnant economy (double meaning; regional name and economic state)	• Popular celebrity narration • Directed screen of stagnant/vibrant market • Screen caption	Gyeonggi Province residents	Promoting basic income for COVID-19 disaster relief	1
	NH Nonghyup: Stay strong Korea! Together! Let us get it over it!	NH Nonghyup (April 2020)	• Plays a cheerful music video to convey that if we have the courage to encourage and comfort each other and stand up again, we will be able to overcome difficulties quickly	• Screen of popular group singing • Field photos • Screen showing people serving in the field • Images of hard-working people living their daily lives • Screen of citizens cheering up	Korean public	Encouraging hope and people's active cooperation	1

(*Continued*)

Table 2 (Continued).

Message	Public Service Advertising	Sender	Feature	Channel	Receiver	Expected Effect	CVI
Encouragement of consumption	Together campaign	Ministry of SMEs and Startups (April 2020)	• Encourages people to become good consumers through direct transactions or prepayment after showing merchants and farmers suffering because of reduced public consumption of goods	• Screen of merchants and farmers working • Real interviews with merchants and farmers • Scenes showing interviews with citizens • Authentic photos of the consumption of goods obtained from social media • Screen caption	Korean public	Recovery after economic downturn	1

Abbreviations: COVID-19, coronavirus disease 2019; KCDC, Korea centers for disease control and prevention; DNA, deoxyribonucleic acid; ROK, Republic of Korea; CVI, content validity index.

Federation) and showed COVID-19 response images from the field of hardworking people living their daily lives, and citizens cheering up, as the message that we can overcome difficulties together was delivered in the form of a music video by a popular K-pop group.

Providing Information

Three of the 17 PSAs for COVID-19 were for providing information. One advertisement was produced each month, from February through April 2020. "COVID-19 national prevention rules" was produced in February 2020 by the Korea Centers for Disease Control and Prevention. It delivered information on behaviors for the prevention of COVID-19 infection and countermeasures in the case of suspected symptoms using design image footage, screen caption, narration by a male voice actor, and sign language. "Safe public relief hospital" was produced in March 2020 and delivered a description of a public relief hospital by using motion graphic design, while "public relief hospital" was produced in April 2020; it added a graphic image to a directed situation within the context of a popular drama and provided a description of public relief hospitals using actors from the drama as models and voice actors.

Promoting Public Participation in the Response

Two of the 17 PSAs were aimed at encouraging public participation in the COVID-19 response. Both were produced in March 2020. "Hold on! campaign (last golden time)" was made by the Seoul Metropolitan Government. Utilizing pictures showing the current situation of COVID-19 and design images, it presented behavioral rules for citizens and used screen captions and images of an announcer speaking to emphasize that this is the last chance to prevent the community spread of COVID-19. "COVID-19, we can overcome it with the power of citizens" was produced by Incheon Metropolitan City. It used a directed situational drama that reconstructed the case of an infected person who showed consideration for others by following guidelines, and footage of actual written text along with the journal of the infected person. The PSA used screen captions and the narration of a female voice actor to deliver the message that we can overcome the COVID-19 crisis.

Supporting Volunteers

The National Health Insurance Service produced a PSA in February 2020 to support volunteers who worked during the COVID-19 crisis. Showing photos of COVID-19 responses including mosaics, it used screen captions and the narration of a male voice actor to convey gratitude

for all the hard work and dedication to protecting the Republic of Korea.

Encouragement of the Consumption of Goods

Of the 17 PSAs, one was produced in April 2020 by the Korean Ministry of Small and Medium-sized Enterprises and Startups with the aim of promoting the consumption of goods to overcome economic difficulties due to the reduced economic activity caused by the COVID-19 crisis. Incorporating actual images of and interviews with merchants and farmers, interviews with citizens, and authentic photos from social media showing the consumption of goods, it used screen captions to encourage people to be good consumers through direct transactions or prepayment of goods. The PSA also showed farmers and merchants suffering because of the public's reduced consumption of goods.

Comparative Analysis

This study conducted a case analysis of TV PSAs produced and aired in the midst of public crises of novel infectious diseases using Laswell's SMCRE model. Based on the results, we identified the commonalities and differences in the TV PSAs for the MERS and COVID-19 responses.

There were two common features in the TV PSAs for MERS and COVID-19. First, TV PSAs provided information and delivered messages to promote public participation in the MERS and COVID-19 responses. Second, in the early stages of the transmission of novel infectious diseases, the advertisements provided information on behavioral rules to prevent further spread and countermeasures in the case of suspected symptoms.

However, there were several differences in the PSAs for MERS and COVID-19. First, TV PSAs for the MERS response were all produced in June, one month after the first case was identified, while those for COVID-19 were steadily produced from February to April, two to four months after the identification of the first case. Second, there was a difference in the information provided: TV PSAs for the MERS response indicated that infection occurs limitedly in confined spaces such as hospitals. On the contrary, the COVID-19 advertisements emphasized social distancing and refraining from going outdoors, and provided information about public relief hospitals, which were not mentioned in MERS PSAs. Third, the most frequently covered message in TV PSAs for the MERS response was providing information, while public support and encouragement were the most frequent messages in the COVID-19 advertisements. Fourth, videos that promoted public participation in the MERS response conveyed the theme of cheering on medical staff, as well as messages that supported medical staff, patients, the quarantined, and their families. On the contrary, COVID-19 PSAs delivered messages of support to all volunteers and medical staff, patients and the quarantined, their families, merchants and farmers who were having difficulty with the reduced consumption of goods, and the general public, emphasizing that we must overcome the disease together. Fifth, there were differences in the delivery channels. TV PSAs for the MERS response mainly used mosaic-processed field photos or design images, and delivered the main messages through narration and screen captions. Conversely, only one PSA for COVID-19 used mosaic-processed field photographs, while the remainder used field photos without mosaic process. The COVID-19 PSAs used various methods to deliver messages, including famous sayings by great people, positive messages from famous celebrities, videos and songs with stories, and sign language as well as screen captions. Sixth, the PSAs for the MERS response did not mention the controversial aspects of the government's response, while the COVID-19 PSAs mentioned the distribution process for masks.

Discussion

This study involved a case analysis of TV PSAs that were produced and aired amid public crises resulting from novel infectious diseases using Laswell's SMCRE model. Based on the results, we identified the commonalities and differences in TV PSAs for the MERS and COVID-19 responses.

The results show that TV PSAs provided information and delivered messages to promote public participation in the responses to MERS and COVID-19. Also, in the early stages of the transmission of novel infectious diseases, information on behavioral rules to prevent their spread and countermeasures in case of suspected symptoms was provided.

The World Health Organization (WHO) established disease outbreak communication guidelines at the beginning of the MERS outbreak in 2005.[18] These conveyed the following key elements of risk communication: Build trust, Announce early, Be transparent, Respect public concerns, and Plan in advance. According to the WHO, trust is a key virtue of risk communication, and the fastest way to build trust is to admit uncertainty without being overly

confident in what is known about the novel infectious disease. Since people tend to overestimate risks when they think information has been withheld, it is necessary to inform the public of the facts as soon and as transparently as possible to prevent unnecessary panic. The WHO also regards the public as a crucial factor in developing risk communication plans and emphasizes that the government should understand the public's beliefs, its perspective on the situation in which disease has occurred, and the level of citizens' knowledge in order to deliver messages that can help them protect themselves from infection.

However, there were some differences in both the content and delivery method for the PSAs regarding MERS and COVID-19, which are related to the key elements of risk communication outlined by the WHO. Of the abovementioned five elements of risk communication, TV PSAs for the response to MERS satisfied only one, which was the need to Announce early. Conversely, COVID-19 TV PSAs made efforts to achieve all five elements. Also, all the PSAs for the MERS response were made in June, in the early stages of the outbreak, while the COVID-19 PSAs were steadily produced from February to April. There was no mention of the controversy surrounding the government's response in the TV PSAs for MERS, but the COVID-19 PSAs mentioned the controversy over the mask distribution process,[19] which showed an effort by the government to communicate with the public and gain its trust.

In addition, TV PSAs for the MERS response emphasized that infections occur "limitedly" in confined spaces such as hospitals. There may have been fewer attempts to engage the entire population in the MERS response since the infectivity rate was lower than that for COVID-19.[20] However, because the government did not disclose the name of the hospital designated as a treatment center at the time of the MERS outbreak, the public could not know the location of the "limited space." Moreover, the public rarely encountered an infected person owing to their fear of visiting hospitals even if they experienced symptoms.[21] This uncertainty led to anxiety in people's daily lives, and the non-disclosure policy of hospital names has been consistently cited as an important factor in the development of the MERS outbreak in Korea.[22]

On the contrary, since COVID-19 is characterized by a much higher infectivity rate than MERS,[20] the participation of the entire nation has been essential in responding to the crisis. Therefore, the government emphasized social distancing through TV PSAs and advised all citizens to refrain from going outdoors and to participate in the COVID-19 response. In addition, unlike in the MERS response, the government provided information on "public relief hospitals" early in the COVID-19 response, thereby enabling the public to utilize hospitals with knowledge of their status. Through the provision of transparent information, the government gained the trust of the public that it was doing its best to overcome the COVID-19 crisis.

There were also differences in the delivery method for MERS- and COVID-19-related PSAs. TV PSAs for the MERS response mainly used mosaic-processed field photos, while the COVID-19 PSAs used field photos, with only one mosaic-processed field photo. In addition, evidence suggests that the government made efforts to gain the public's trust through a wide range of delivery methods that included not only sign language and screen captions but also famous sayings from well-known people, positive messages from popular celebrities, and videos and songs with stories.

Korea experienced several problems in its response to the MERS outbreak, such as employing workers in an infectious disease situation, implementing discriminatory closure measures for apartments in Gangnam, Seoul, and rural villages in underdeveloped regions, and providing differential access to information based on socioeconomic levels, leading to a deterioration of communities.[23] Therefore, the MERS crisis had many social consequences. Consequently, the country learned that various disasters, including natural disasters, which are generally thought to impact everyone equally, actually occur in a discriminatory manner and that society is prone to disintegration as a result. Korea also learned that efforts should be made to increase the resilience of society and prevent social disintegration by supporting vulnerable populations and raising public awareness in future disaster situations.

Ultimately, owing to the uncertainty inherent in disaster management and the increasing complexity of modern society, the public must realize that the government is not the only solver of problems. Therefore, the focus of disaster management should be shifted to improving social responses and social resilience by respecting and utilizing citizen knowledge and the experiences of members of society as valuable social assets.[24] In addition, since disaster inequality stems from information disparity, structural inequality in society, and the dissolution of the community, we must identify the needs and characteristics of the socially disadvantaged, who are the most vulnerable to disasters, and make efforts to address structural

inequalities.[25] Furthermore, efforts should be directed toward ensuring that the formation and operation of a social community that presupposes the elimination of structural inequality act as a core mechanism for securing publicity.[23]

Overall, the main focus of TV PSAs for the MERS response was providing information. According to the theory of planned behavior, perceived behavioral control is a method for providing information, such as that concerning disease prevention measures and encouraging the public to follow them. In advertising, information transmission is primarily aimed at providing instruction as well as preventing certain actions.[26] As the public wants to receive information through advertisements,[27] informative PSAs are highly effective.[28] Therefore, PSAs on the MERS response—which actively provided relevant information using perceived behavioral control—were appropriate for motivating the public to adopt disease prevention measures.

The main focus of the COVID-19 TV PSAs was public support and encouragement. While the MERS response featured only one PSA on the topic of supporting medical staff, the COVID-19 PSAs delivered messages of encouragement to many individuals supporting the response to the outbreak, including volunteers and medical staff, patients and the quarantined, their families, merchants and farmers suffering because of the reduced consumption of goods, and the general public, and emphasized that we must overcome it. Attempts were also made in the COVID-19 response to consider vulnerable groups that may experience restrictions in acquiring information, and various message delivery methods, such as sign language and motion graphics, were utilized to gain the attention of various consumers through the inclusion of famous celebrities, characters, and popular dramas.

The use of perceived behavioral control for providing information to and persuading the public can also be found in numerous PSAs for COVID-19 prevention. Nonetheless, compared to those for the MERS response, the COVID-19 advertisements were able to produce more positive ripple effects as they covered a wider range of target audiences and employed more diverse promotion channels, such as sign language and motion graphics.

For COVID-19 public advertisements, the concepts of attitudes and subjective norms from the theory of planned behavior were also utilized. These PSAs encouraged a positive attitude through hopeful messages that the crisis will be overcome and used subjective norms by emphasizing a national character of strength and resilience in times of crises. Consequently, receivers who viewed these advertisements must have been strongly influenced by them in terms of behavioral changes for disease prevention.

Nevertheless, this study has some limitations. Compared to MERS, the COVID-19 pandemic is longer lasting. When people stay home for long periods owing to the need for social distancing, there is an increased risk of domestic violence, child abuse, and suicide,[31] which can be a result of factors such as poor mental health, drug abuse,[32,33] and loneliness. Nevertheless, it is regrettable that we are focusing only on the economic losses associated with social distancing, and there is a lack of policies and guidance for caring for vulnerable populations that were marginalized during the intensive response to novel infectious diseases.

In modern society, the internet offers easy access to information. Especially in the context of major events or occurrences such as elections and infectious disease crises, a great deal of information is produced in response to public interest. Through this process, a lot of false information is also produced.[29] In the midst of the COVID-19 crisis, Korea was preparing for a parliamentary election.[30] The pandemic was used as a political tool by both the ruling and opposing parties, and as a result, a considerable amount of inaccurate news was produced and spread to YouTube and social media.[30] Under these difficult circumstances, the government sought to disseminate accurate information to prevent the disintegration of the community and ensure the public's participation in the COVID-19 response. Specifically, the government made efforts to restore the public's confidence in its handling of the crisis through materials and media that highlighted the positive aspects of its response, which served to awaken the people's national pride and encourage their participation under the guidance of the government.

Limitations

There was a large difference between the number of PSAs for MERS and that for COVID-19 in this study. As the PSAs for the MERS response were produced in 2015, they were less accessible in 2020 than those for COVID-19; additionally, there may have been some MERS advertisements that were not included in this study. Therefore, caution must be exercised when interpreting the results of the comparative analysis of the MERS and COVID-19 situations. Additionally, PSAs for COVID-19 were both more in number and more diverse because: 1) COVID-19 is more contagious than MERS, and therefore, more

people are interested in preventive measures against the infection and 2) the duration of the ongoing COVID-19 pandemic has been longer than that of MERS. Finally, differences should be considered when interpreting the results of the MERS and COVID-19 situations, both of which involved government communication. The COVID-19 outbreak immediately preceded the 2020 Korean general election. Thus, in this period, positive public evaluation was especially important to the administration, which may have affected the response to the pandemic.

Conclusion

This study analyzed the focus of PSAs related to the outbreaks of MERS and COVID-19 and how they differed from each other. In terms of content, methods of delivery, target audience (receivers), and expected effects, COVID-19-related PSAs were more diverse than those about MERS. In addition, the Korean government's attitude toward risk communication has been more proactive during the COVID-19 pandemic than during the MERS situation. However, there are some differences in the characteristics of both viruses as well as the sociocultural circumstances during the MERS and COVID-19 outbreaks; these should be considered when interpreting the present results.

Consent for Publication

No details, images, or videos relating to individual participants are included in the manuscript.

Abbreviations

COVID-19, coronavirus disease 2019; MERS, Middle East respiratory syndrome; PSA, public service advertisement; SMCRE, Sender, Message, Channel, Receiver, and Effect; WHO, World Health Organization.

Ethics Approval and Informed Consent

No human subjects were used in this study.

Author Contributions

Both authors made substantial contributions to the study conception and design, acquisition of data, and analysis and interpretation of data; were involved in drafting and revising the article; agreed on the journal to which the article will be submitted; provided final approval of the version to be published; and agreed to be accountable for all aspects of the research.

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