International Journal of Communication 14(2020), 4035–4054 1932–8036/20200005

Culture and Health Communication: A Comparative Content Analysis of Tweets from the United States and Korea

MINHEE CHOI
Virginia Commonwealth University, USA

BROOKE WEBERLING MCKEEVER
University of South Carolina, USA

The Centers for Disease Control and Prevention (CDC) are central channels for the delivery of health information in the United States and also in other countries. This study explores Twitter content from the CDCs in South Korea and the United States by comparing health communication messages in terms of cultural differences. The study found significant differences in communicating health in terms of frequently mentioned health topics, use of collective words, presence of authority figures, and the frequency of communication with the public. The study also indicates that economic as well as cultural factors influence the CDCs' health communication. Overall, the study suggests how and how often the CDCs communicate may be associated with the two countries' public health systems and surveillance in each country. Theoretical and practical implications are discussed.

Keywords: CDC, Twitter, health communication, content analysis, international communication

The Centers for Disease Control and Prevention (CDCs) in the United States (CDC) and South Korea (KCDC) are responsible for health safety and prevention issues in each country. The CDC has been recognized as providing "public health research, innovations in information technology, and advanced communications" (Bernhardt, 2004, p. 3) to improve health in America and around the world. The KCDC also emphasizes its role as a leading institution in terms of security and safety during public health emergencies and provides surveillance of various diseases through communication (Korea Centers for Disease Control and Prevention, 2017).

Heath communication is a tool to influence individuals' health behaviors, eliminate health disparities, and achieve public health safety (Bernhardt, 2004; Freimuth & Quinn, 2004). Though public health agencies and health advocacy organizations actively promote health issues, the CDCs in both countries are in charge of major health safety issues. Although several studies (e.g., Diddi & Lunday, 2017; Park, Reber, & Chon, 2016) have examined the importance of health communication led by major health

Minhee Choi: taigomi@gmail.com
Brooke Weberling McKeever: brookew@sc.edu
Date submitted: 2018–10–17

organizations, there have been limited scholarly efforts to identify what and how they actively communicate with the public. Furthermore, although many public health organizations have established a social media presence, the role of social media in the organizations' health communication has been infrequently discussed (Ramanadhan, Mendez, Rao, & Viswanath, 2013). To fill this void, this study examines how the CDCs in the United States and South Korea use Twitter to promote health issues and communicate differently according to the cultural characteristics that are inherent in each country. Specifically, this study explores culture as a major factor influencing the different health communication messages in both countries.

With an ever-increasing range of global health threats and chronic diseases, the preventative, surveillance, and control roles filled by the CDCs in public health goes beyond conventional organizational agendas. This study looks at health communication approaches with a focus on cultural comparisons in two different countries. Considering both CDCs' communications roles (i.e., how they react to health issues and how this communication influences media agendas, health advocacy groups' campaign agendas and strategies, as well as public health behavior and reactions to disease), examining the CDCs' public health communication is important. Furthermore, Twitter is an imperative tool for health organizations to reach a larger public (Park et al., 2016) and provide up-to-date health information during a public health crisis (Odlum & Yoon, 2015).

To that end, this study considers both countries not only because they have different cultural dimensions but also because they have different public health prevention systems. The United States has one of the most advanced health security systems in the world (Grambsch & Menne, 2003), but South Korea has recently updated contagious disease control measures and regulations on public health at the national level because of a series of outbreaks of pandemic diseases such as MERS in 2015 and avian influenza in 2016 and 2017. The two countries were also chosen for a comparison because of their active use of Twitter (Shim, 2008). The United States was ranked first in the world, and South Korea was ranked fourth in Asia Pacific in terms of the number of active Twitter users (Statista, 2018). Through a content analysis of tweets and comparisons of the two organizations, this study attempts to understand how cultural factors might shape health communication and how these health messages contribute to robust public health systems. Understanding cultural factors that may influence health communication, the different public health agendas, and the two organizations' preventative actions and messaging will add meaningful insights to various aspects of health communication literature.

Twitter and Health Communication

Increasingly, organizations and publics use social media during crises (Liu, Austin, & Jin, 2011). Booz Allen Hamilton (2009) noted that a Health and Human Services Twitter account added 3,000 followers during a salmonella outbreak in 2009. Pointing out that publics relied on Twitter as an information source during the outbreak of H1N1 in 2009, Yoo, Choi, and Park (2016) argued that during public health crises, publics are more likely to receive information from social networking sites rather than traditional media. Mollema and colleagues (2015) also found that people use Twitter to become aware of public health crises and preventive measures.

One of the reasons Twitter is popular is brevity; 280-character tweets can be shared easily among a wide range of users. Zhang, Jansen, and Chowdhury (2011) found that the frequency of posting by organizations influences public engagement and information sharing. Several studies have looked at how

Twitter is used by various government entities, including Congress (Golbeck, Grimes, & Rogers, 2010), local government (Avery & Graham, 2013), and health departments (Avery et al., 2010), as well as during health crises (Graham, Avery, & Park, 2015).

When Ramanadhan and colleagues (2013) analyzed the use of social media by community-based health organizations in the United States, they found that many of these organizations use social media simply to promote their organizations rather than for public engagement and communication. Park and associates (2016) found that health organizations enhance interactions with the public through retweeting, the reply function, hyperlinks, and hashtags. Hashtags and hyperlinks are frequently used by health organizations as interactive tools (Park et al., 2016). Additionally, in social media guidelines for health communicators published by the CDC, it is noted that social media allows health organizations to share public health information, listen and collect feedback in real-time, and increase direct engagement with the public (Heldman, Schindelar, & Weaver, 2013). As the field of health communication has advanced, public health organizations have had to modify the ways they engage and interact with target audiences and communities. In public health terms, community engagement is defined as "the process of working collaboratively with and through groups of people affiliated by geographic proximity, special interest, or similar situations to address issues affecting the well-being of those people" (Clinical and Translational Science Awards Consortium, 2011, p. 3). A well-rounded and robust public health system is dependent on community engagement and effective health communication, including the use of technology for interactive health communication (Kreps & Maibach, 2008). Given that a robust public health system depends on interactive health communication, including the use of social media, organizations' efforts to communicate with various publics contribute to the development of a robust public health system (Bernhardt, 2004).

Communication efforts through Twitter may show different levels of interaction and public engagement. In particular, the use of retweeting and replying to other users has been found to be an important part of the community-building focus of organizations on Twitter (Lovejoy & Saxton, 2012). Accordingly, this study proposes the following research question:

RQ1: What is the difference in the frequency that each organization presents retweets, replies, hyperlinks, likes, and hashtags?

Culture and Health Communication

Culture is one important factor influencing health and behavior, and it has been studied in health communication (Kreuter & McClure, 2004). Thomas, Fine, and Ibrahim (2004) viewed culture as a cause of health disparities. They stressed that culture influences how publics as well as policy makers perceive and behave about health issues. Kreuter and McClure (2004) stated that culture is necessarily related to race, ethnicity, and national identity, and it leads to different health problems and agendas in individual countries (L'Etang, 2008). For example, whereas stomach cancer is the most common cancer and the number one cause of cancer death in South Korea (linked to Koreans' salty diets; Wolinsky, 2010), the most common cancer and second leading cause of cancer death in the United States is breast cancer (American Cancer Society, 2018). Samadi (2015) noted that Caucasian women have a slightly higher risk of breast cancer compared with another ethnicities.

Culture also reflects different values, beliefs, norms, and communication practices (Jiang, Barnett, & Taylor, 2016; Mao & Yuxia, 2015). In health communication, defining health problems and creating solutions are also based on culture (Dutta-Bergman, 2005). Kreuter, Lukwago, Bucholtz, Clark, and Sanders-Thompson (2003) argued that health educators are required to identify cultural characteristics within a target population, understand how this characteristic leads to health behavior, and use this knowledge in health promotion planning and implementation. The U.S. Surgeon General (2001) also has emphasized that cultural variables operate as significant factors in health problems, and effective prevention and treatment need to be culturally relevant. Therefore, health-related priorities, decisions, behaviors, health communication programs, and messages are directly or indirectly influenced by cultural characteristics (Pasick, D'onofrio, & Otero-Sabogal, 1996). For example, Korean's traditional dietary practices could produce health messages for certain diseases, such as stomach cancer. Before exploring specific cultural differences, the second research question attempts to examine the differences in health agendas in the two countries based on Pasick and colleagues' (1996) argument that cultural characteristics influence health priorities and health communication:

RQ2: What health issues are frequently mentioned in each of CDC's tweets?

Long-Term Versus Short-Term Orientation in Health Promotion

Cultural dimensions developed by Hofstede (1980) and used by others (Hofstede & Minkov, 2010; Sun, Horn, & Merritt, 2009) were used in the current study. The cultural dimension known as "long term versus short term" indicates an orientation toward the future and time (Hofstede & Minkov, 2010). Cultures with long-term orientations focus on the long-term consequences rather than immediate outcomes (Hofstede, 1991). Therefore, managing social problems consistent with a long-term cultural orientation means providing solutions for the long term rather than an instant fix (Newman & Nollen, 1996). South Korea is classified as having the most long-term orientation among the 93 countries in Hofstede and Minkov's (2010) study, whereas the United States is a culture with a shorter-term orientation (ranked 71st of 93) according to Hofstede and Minkov.

The CDCs in both countries promote health campaigns to improve health among their respective populations, and the organizations aim for effectiveness of economic impact in each country (Messonnier, 2006). The CDCs are responsible for identifying, measuring, and evaluating health prevention strategies (Messonnier, 2006). Good public health promotions generate long-term effects with less cost (Glasgow, Vogt, & Boles, 1999). Public health agendas have been evolving from a focus on disease prevention to "capacity building for health" (Breslow, 1999; Kickbusch, 2003, p. 384) to pursue longer term effects and economic efficiency in terms of public health outcomes. Considering the potential health gains from investment, Nutbeam (1998) argued that valued outcomes are from long-term effects with moderate costs. According to this notion, Nutbeam classified three different levels of health promotion effects: (1) health and social outcomes, which are long-term; (2) intermediate health outcomes; and (3) health promotion outcomes, which are shorter term among the three categories' outcome effects. To make each category understandable, this study renamed each category as long-term, midterm, and short-term effects, respectively, rather than using the original names.

The long-term effects represent the top of this classification. It refers to quality of life and health equity, and it is the ultimate goal of health prevention efforts (Nutbeam, 1998). The key approach at this level is to shift health promotion from focusing on individual behavioral changes to setting a strategy for groups of individuals to pursue the long-term effects of health prevention outcomes (Kickbusch, 2003). It is expected that the health promotions on this level bring about long-term outcome effects with modest investment by targeting specific populations such as adolescents, women, and people with mental health issues.

On the other hand, health promotion in the midterm effects level focuses on changing individuals' behaviors, such as physical activity or tobacco and drug use. This level is more focused on direct outcomes compared with the upper level, long-term effects. Health programs operating at this level are evaluated by looking at results in terms of changes in health behavior.

Finally, the short-term outcome level represents the most immediate effects of health promotion (Nutbeam, 1998). Examples focusing on short-term outcomes include programs aimed at preventing communicable diseases, promoting vaccination, and mobilization of health information. This level approaches health promotion as a way to lessen the harm of collective society on a total population (Kickbusch, 2003). Therefore, the lower level of health promotion is more likely to deal with acute problems rather than general health quality issues. According to this classification schema, this study classified health communication topics into four categories (long-, mid-, and short-term effects, and "other"). Based on the above reasoning, this study proposes the following research question and hypothesis:

RQ3: How have both the CDC and KCDC presented messages aimed at health promotion? Have certain health promotion issues appeared more often than others?

H1: The KCDC is more likely than the CDC to present long-term health promotion issues.

Individualism Versus Collectivism

The individualism–collectivism dimension is one of the most distinctive differences between Western and Asian cultures (Gudykunst & Lee, 2001). Hofstede (1980) defined individualism–collectivism as "people taking care of themselves and their immediate family only in a loosely knit social structure, versus people belonging to in-groups to look after them in a tightly knit social organization" (p. 87). While an individualist culture emphasizes personal goal achievement and independence, a collectivistic culture values group goals and interdependence (Hofstede, 1991). From this perspective, South Korea is a highly collectivistic culture, whereas U.S. culture is individualistic (Hofstede, 1991).

Cha (1994) explains that collectivistic culture in South Korea is defined by the word "woori (we/our)." "Woori" indicates homogenous, closed, and exclusionary group membership (J. Kim, 2010). Because South Korea is considered to be a one-ethnicity country, Korean culture has a stronger bond for in-group members, and this notion differentiates the members between in-groups and out-groups (J. Kim, 2010). This tendency may influence perceptions of contagious diseases from external countries. When H. S. Kim, Sherman, and Updegraff (2016) examined the influence of individualism and collectivism on individuals' perceived vulnerability to Ebola, they found that higher collectivism led to greater perceived vulnerability to Ebola. J.W.

Kim and associates (2016) also noted that individuals' perceptions of contagious diseases were caused by psychological fear, not by the disease itself, and by doubt toward public health security systems. H.S. Kim and colleagues (2016) also found that perceived high vulnerability to Ebola led to a more xenophobic response.

The individual–collectivist dimension is related to the extent to which the populations in the culture have been exposed to contagious diseases (Oaten, Stevenson, & Case, 2009). Oaten and associates (2009) noted that the combination of high levels of previous disease exposure and limited current exposure leads to closeness to experience and introversion; accordingly, these factors make the culture more collectivistic in nature. Fincher, Thornhill, Murray, and Schaller (2008) also indicated that collectivistic cultures have high pathogen prevalence. Previous prevalence or experience with pathogen diseases is more likely to influence being afraid of contagious diseases in collectivistic cultures (Skolnick & Dzokoto, 2013). Accordingly, with a highly collectivist culture, South Korea is hypothesized to have more preventative health messages about contagious diseases from external countries:

H2: The KCDC is more likely than the CDC to promote health messages about preventative actions for contagious diseases coming from outside the country.

H3: When promoting health messages, the KCDC is more likely than the CDC to use collective words such as "we" and "us."

Power Distance

Power distance refers to how much inequality of power people accept and admit (Hofstede, 1980). It indicates the extent to which people with less power respect authority or the powerful. In high power distance cultures, members of the society consider inequality as a part of life (Johnson & Miller, 2002). According to Hofstede's (1980) cultural dimensions, Korea is considered to be one of the countries with a high power distance culture, whereas the United States is a low power distance culture. When Baek and Yu (2009) investigated how weight-loss websites promote diets differently in the United States and South Korea, they found that Korean websites are more likely to use modeling (learning from celebrities) strategies in their health messages. Baek and Yu also indicated that people in collectivist and high power distance cultures want to be more congruent with celebrities.

Applying this notion to the credibility of health messages, it is plausible to infer that health messages from the KCDC may be more likely to use authority figures such as the president, directors of government agencies, or even celebrities to promote health messages. In contrast, the CDC in the United States is less likely to be dependent on authority figures to convey health messages. Authority is sometimes communicated by the source of the message and can be communicated through images. When Dixon, McKeever, Holton, Clarke, and Eosco (2015) examined the role of images in health communication, they found that a photo of scientists with text provides individuals with a better understanding of health messages. The scientists' photo influenced decision-making processes on specific health-related issues as well as individuals' scientific beliefs. Considering the importance of photos and images in health and digital communication in general, and the high power distance culture in South Korea, this study proposes the following final hypothesis:

H4: *The KCDC is more likely than the CDC in the United States to use authority figures' photos to promote health messages in their tweets.*

Method

Sample

This study considers all of the tweets posted by the CDC (@cdcgov) in the United States and the KCDC (@KoreaCDC) in South Korea as the universe or total population for this research. The end date was selected as the most recent day before data collection began (in February 2018). The Twitter account of the CDC was created in May 2010, and the KCDC Twitter account was created in October 2010. The CDC posted 20,752 tweets during this time, while the KCDC had 1,563 tweets at the point of drawing the sample. The CDC account shows 269 following and 1.1 million followers, while the KCDC shows 1,427 following and 4,296 followers. A total of 1,000 tweets, 500 tweets from each account, were selected for analysis using systematic random sampling. The sample size was selected based on work by others in this area (Neuendorf, 2002; e.g., Lin & Peña, 2011; Park et al., 2016).

Researchers have adopted different sampling methods in collecting Twitter data (H. Kim, Jang, Kim, & Wan, 2018). H. Kim and colleagues (2018) indicated that sampling methods on Twitter are different than traditional media because of content production cycles. Though traditional media produce content more regularly within a certain period, social media produce large amounts of content within no particular time schedule. Although sampling methods with Twitter are different than traditional media, tweets from the CDC and KCDC were produced on a fairly regular basis. Furthermore, this study looks at tweets of two Twitter accounts, not by searching all of Twitter for key words. Therefore, guided by Rocheleau and associates' (2015) study that drew the same size sample from different Twitter accounts, different sampling intervals (*k*) were used for the CDC and KCDC to balance the number of tweets from each account and maintain the equal chance of sample selection for every element from each account (Neuendorf, 2002). Using a systematic sampling method, a sampling interval (*k*) was determined by dividing the total number of tweets by the sample size (Neuendorf, 2002). Every *k*th tweet was included in the sample. Then, tweets were manually collected by taking screen shots of every *k*th tweets from each organization's account.

Coding

Two coders—a native speaker of English and a bilingual coder fluent in both Korean and English—coded tweets of the CDC and KCDC, respectively. Intercoder reliability was calculated by double coding a random subsample (n = 150, 15%) of the data after having conducted a series of training and pilot-test sessions (Neuendorf, 2002). The subsample was randomly selected from the CDC tweets. Intercoder reliability corrected for agreement by chance, and (Krippendorff's alpha) ranged between .91 and 1.00, with an average reliability of .96. The intercoder reliabilities of the sample were as follows: type of tweets (α =.91), health topics (α =.93), presence of photo (α =1.00), presence of authority figures in the photo (α =.92), presence of collective words (α =1.00), the number of retweets (α =1.00), the number of likes (α =1.00), presence of hyperlinks (α =.96), presence of hashtags (α =.97), presence of replies (α =.95), and the number of replies (α =.97).

Initially, each tweet in the sample was coded in terms of the type of tweet, including original tweet, retweet, quoted retweet, and reply. Then, two coders determined the topic of health communication in each tweet. The 21 categories of health communication topics were adapted from Jha, Lin, and Savoia's (2016) study about health communication by state health departments in the United States. Each tweet was coded for the most salient topic among the 21 topics. Each tweet was determined according to the following criteria: (1) type of disease, (2) target population, (3) type of action, and (4) not applicable/other. For example, if a tweet was about a vaccination campaign to prevent infectious diseases, such as pneumonia and flu, targeting adults 65 and older, the tweet was coded as Category Topic 14, communicable disease, and Category Topic 2, geriatric health. If a tweet did not include any type of disease or target population, it was coded based on the recommended behaviors (e.g., less alcohol consumption, quitting smoking) in the tweet. More specifically, if a less-alcohol-consumption campaign mentioned specific diseases to be aware of or certain population targeted, the tweet was coded based on (1) the disease mentioned, (2) target population, and (3) action suggested. In addition, each topic was classified into four categories (long-, mid-, and short-term, or "other") in terms of health promotion effects. These categories were informed by Nutbeam's (1998) approach. The "other" category includes any tweet that did not focus on one of the listed health promotion topics and captured miscellaneous things such as live tweeting during meetings and job postings from the organizations.

Coders also determined the presence or absence of a photo and then decided whether there were authority figures in the photo. Then, coders recorded the presence of collective words such as "we" or "us." Although the authority figures and collective words may have been listed multiple times in one tweet, these variables were coded as simply "present" (1) or "not present" (0). Coders then analyzed the presence or absence of hyperlinks, hashtags, and replies, as well as the number of retweets, likes, and replies.

Results

The first research question (RQ 1) addresses the differences in the frequency that each organization uses retweets, replies, hyperlinks, and hashtags in its Twitter posts. For the KCDC, 96% (n = 480) of the tweets appeared to be original posts, followed by replies (n = 15, 3.0%) and retweets (n = 5, 1.0%). A similar trend appeared in the CDC's tweets: 81.2% (n = 406) of tweets posted by the CDC were original tweets, 17.6% (n = 88) were replies, and 1.0% (n = 5) were retweets. Of the Twitter communication features analyzed, the CDC was more likely to include hyperlinks (64.2%) and hashtags (73.4%) than was the KCDC (hyperlinks: 55.8%, hashtags: 25.4%), and the differences were statistically significant (χ^2 = 7.35, df = 1, $p < .05$), (χ^2 = 230.43, df = 1, $p < .05$). Finally, the CDC's followers were more likely to retweet (M = 24.81, SD = 37.32), like (M = 12.7, SD = 22.99), and reply (M = 1.44, SD = 3.53) than were followers of the KCDC (M = 4.24, SD = 10.57; M = 0.87, SD = 1.82; M = 0.13, SD = 0.52). These differences were statistically significant (t = 11.856, $p < .001$), (t = 11.476, $p < .001$), (t = 8.227, $p < .001$).

The second research question (RQ 2) examines frequently mentioned health issues in each CDCs' tweets. The health issues covered in the U.S. and Korean Twitter accounts were tabulated (see Table 1). For the CDC, the first, second, and third most covered health issues were Topic 19, miscellaneous (n = 96, 19.2%); Topic 15, communicable diseases from overseas (n = 86, 17.2%); and Topic 11, drugs and alcohol (n = 49, 9.8%). For the KCDC, the first, second, and third most covered health issues were Topic 15,

communicable diseases from overseas (*n* = 131, 26.2%); Topic 14, communicable disease (*n* = 76, 15.2%); and Topic 19, miscellaneous (*n* = 71, 14.2%).

Table 1. Health Promotion Topics and Effects.

Health promotion topic	CDC	KCDC
Long-term effects		
1. Adolescent health	1 (0.2%)	0 (0.0%)
2. Geriatric health	0 (0.0%)	2 (0.4%)
3. Infant and child health	23 (4.6%)	16 (3.2%)
4. Women's health	5 (1.0%)	2 (0.4%)
5. Mental health	1 (0.2%)	1 (0.2%)
Midterm effects		
6. Environmental health	10 (2.0%)	49 (9.8%)
7. Healthy living: healthy community living; medical advice; nutrition and diet; physical exercise	39 (7.8%)	15 (3.0%)
8. Injury and violence: road traffic accidents; violence (suicide, others); other injuries	4 (0.8%)	1 (0.2%)
9. Reproductive health	6 (1.2%)	0 (0.0%)
10. Smoking and tobacco use	11 (2.2%)	2 (0.4%)
11. Drugs (including prescription) and alcohol: alcohol addiction; prescription drug abuse; other addictions	49 (9.8%)	6 (1.2%)
Short-term effects		
12. Cancer prevention: breast cancer; cervical cancer (pap smear, HPV vaccination); other cancers	10 (2.0%)	6 (1.2%)
13. Chronic diseases: diabetes and hypertension; others	25 (5.0%)	22 (4.4%)
14. Communicable diseases: HIV/AIDS and STDs; influenza (flu); West Nile virus; others	44 (8.8%)	76 (15.2%)
15. Communicable disease from overseas	86 (17.2%)	131 (26.2%)
16. Emergency preparedness and response: community resilience; general emergency preparedness; summer preparedness; winter preparedness	4 (0.8%)	20 (4.0%)
17. Health insurance	3 (0.6%)	1 (0.2%)
18. Vaccines and immunization: flu vaccination; others	43 (8.6%)	57 (11.4%)
Others		
19. Miscellaneous: promotion and announcements; meetings (live tweeting); job postings	96 (19.2%)	71 (14.2%)
20. Pet health advisory	2 (0.4%)	0 (0.0%)
21. Others	38 (7.6%)	22 (4.4%)

To further examine specific topics addressed in each organization's tweets, the 21 health topics were classified into four categories according to their short- versus long-term effects.

The third research question (RQ3) asks whether certain health promotion issues have appeared more often than others (see Table 1). The CDC (n = 215, 43%) and KCDC (n = 313, 62.6%) used Twitter primarily to promote short-term effects of health issues, whereas long-term effects appeared least in both the CDC (n = 32, 6.4%) and KCDC (n = 21, 4.2%) tweets. Within each CDC's tweets, short-term health promotions were significantly more present than were long-term health promotions (CDC: χ^2 = 220.70, df = 4, p < .05), (KCDC: χ^2 = 592.64, df = 4, p < .05). To test H1, which predicted that the KCDC would be more likely than the CDC to present long-term health promotion issues, the organizations' tweets were compared. The CDC presented long-term effect health issues significantly more frequently than the KCDC did (χ^2 = 39.50, df = 4, p < .05). Thus, H1 was not supported.

H2 predicted that the KCDC is more likely than the CDC to promote health messages about preventive actions for contagious diseases coming from outside the country. The KCDC (n = 131, 26.2%) had more mentions of preventive actions for contagious diseases coming from outside the country than the CDC (n = 86, 17.2%), and the difference was statistically significant (χ^2 = 9.33, df = 1, p < .05). Thus, H2 was supported.

H3 proposed that there would be more collective words in health messages from the KCDC than the CDC. The KCDC made 102 (20.4%) mentions of collective words in its 500 tweets, whereas the CDC used collective words 68 times (13.6%). The difference was statistically significant (χ^2 = 8.19, df = 1, p < .05), supporting H3.

H4 examines the presence of authority figures in photos that accompanied tweets. The KCDC presented more authority figures (n = 21, 4.2%) in their photos than the CDC did (n = 8, 1.6%). When it comes to using photos in health communication, the KCDC had 146 tweets with photos (29.2%), and 142 photos (28.4%) were presented by the CDC, which shows similar tendencies in terms of the frequency of including photos in tweets. Although there was no significant difference in the number of tweets with photos, the KCDC had significantly more authority figures present in their photos than the CDC did (χ^2 = 6.00, df = 1, p < .05). Thus, H4 was supported.

Discussion

By analyzing the tweets of the CDCs in South Korea and the United States, this study explores some common practices and differences to identify how cultural factors may influence health communication, and also explores these findings to better understand the different health communication practices and public health systems in the two countries.

This study found that nearly 20% of tweets from the U.S.-based CDC focused on the promotion of events, announcements, weather updates, and live tweeting of meetings (the miscellaneous category) rather than the other categories of health and disease. The next most prevalent categories of tweets were communicable diseases from overseas (17%), drugs and alcohol (10%), and communicable diseases (9%).

On the other hand, almost 27% of the KCDC's tweets were about communicable diseases from overseas, followed by communicable disease (15%), miscellaneous (14%), and vaccines and immunization (11%). When Jha and associates (2016) explored Facebook use by state health departments, they found that miscellaneous posts can be used to engage followers. In the current study's samples, the tweets in the miscellaneous category were mostly about health events promoted by the CDC, live tweeting of meetings with the public about specific diseases, or public concerns about health issues. As a result, the miscellaneous category here can be interpreted as the organizations' efforts to engage with the public through communication. The CDC more actively promoted its events through live tweets to the public than the KCDC did.

An interesting finding of this study is that the most frequently mentioned health topics from both CDCs are domestic and overseas communicable diseases. The two categories together accounted for 26% and 41% of sampled tweets from the CDC and KCDC, respectively. Regarding the frequent mentions of contagious diseases, there are several possible explanations. First, with the increase of international travel and influenza virus outbreaks, it is not surprising that the priority of public health agendas is surveillance of these outbreaks. Furthermore, surveillance of epidemics has been the priority of public health agendas throughout history (Choi, 2012), and this is likely to continue or increase following the COVID-19 pandemic. Second, although domestic and overseas communicable disease categories appeared frequently in both CDCs' tweets, the KCDC presented domestic and overseas communicable diseases more often than the CDC did, and overseas communicable diseases appeared more often than domestic communicable diseases in KCDC tweets.

As noted above, collectivistic culture may influence the prevalent outbreaks of communicable diseases, and it may lead the KCDC to have overseas communicable diseases as its primary public health agenda. For example, it is a Korean custom to visit patients in the hospital as part of a duty in a tightly knit social group, which leads to a major risk factor during public health crises caused by contagious diseases (Ki, 2015). In addition, it is also plausible to assume that the frequent presence of communicable diseases in the KCDC tweets could be attributed to the less developed public health surveillance system in Korea. The vaccinations and immunization category was present in 1 of 10 tweets from the KCDC. Although Betsch, Böhm, Korn, and Holtmann (2017) argued that collectivistic culture's emphasis on vaccinations in the context of herd immunity and the individuals' willingness to vaccinate is relatively high, focusing on more individual-level solutions might be partially the result of this less developed public health surveillance system in Korea. Bingenheimer, Repetto, Zimmerman, and Kelly (2003) indicated that the control of infectious diseases was the primary public health agenda in the United States in the early 20th century, and although the United States has seen an increase in antivaccination sentiment in recent years, mass immunization campaigns were an important health promotion effort in the development of U.S. public health systems. Considering the rise of vaccine hesitancy as a global health threat (World Health Organization, 2019), the U.S.-based CDC and other health organizations may want to put more focus on vaccines moving forward.

Related to collectivist culture, follow-up analyses showed that the use of collective words increased exponentially during the outbreak of MERS in Korea (during MERS: 46 times, non-MERS: 1 time). Although individuals' cooperation is imperative in overcoming public health crises, it is also interpreted that the KCDC coped with this public health crisis by attributing some responsibilities to individuals' behavior changes rather than setting and using a sturdy public health surveillance system at community, organizational, and

policy levels (Lee & Paik, 2017). Finally, public health crisis periods such as the global outbreaks of Zika and Ebola (United States) and MERS (South Korea) were included in the final samples in this study, which might have influenced the frequent presence of the communicable diseases category.

Regarding the drug and alcohol category, which was particularly prevalent in tweets from the CDC in the United States, L'Etang (2008) noted that public health in Western countries suffers from overconsumption and addiction. Addiction to alcohol, drugs, and tobacco has been one of the major public health agenda items in the United States for some time now (Chandler, Fletcher, & Volknow, 2009). This shows that economic as well as cultural factors influence public health agendas (Baum, 1999). Combining with cultural factors, DeJong and colleagues (1998) stated that addiction is more common in individualistic cultures, whereas collectivistic family norms in Asian cultures deter addictive behaviors (Castro & Alarcon, 2002).

This finding can be applied to health campaigns in multicultural countries like the United States. Rather than using the same message tactics to target different races or ethnic groups, strategic communicators might need or want to tailor health messages for audiences with different cultural backgrounds. This practice is already being done by some sophisticated organizations and campaigns, but it may become more prevalent as our society shifts and becomes more diverse over time. This finding contributes to cross-cultural health communication research by documenting some theoretical explanations in the context of public communication by major health agencies in two different countries.

Data from this study suggest that the CDC presented more long-term health promotion issues than the KCDC. This finding is the opposite of what one might expect, considering the cultural factor of long-term versus short-term orientation. However, this finding is consistent with previous literature that has identified that the concepts of health promotion are not merely about control of disease, but also deals with the issue of health and life quality in advancing public health promotion (Breslow, 1999). This finding supports the idea that a nation's health protection agency in an advanced public health system, like the U.S. CDC, tends to focus more on long-term health promotion than agencies in less advanced systems do, like the South Korea KCDC. The different public health systems may influence their public health agendas in terms of health promotion effects. This study also found that the KCDC used more authority figures in their photos than the CDC did, which shows evidence of power distance as one of the key cultural distinctions in health messages. The authority figures in the photos included government officials, presidents, directors of the KCDC, well-known medical doctors, and other celebrities. In addition, the KCDC frequently mentioned celebrities' names in their tweets, noting that some celebrities support campaigns and events led by the KCDC. The messages also often mentioned specific athletes' names to encourage individuals to follow certain health behaviors.

Another key finding of this study is that the U.S.-based CDC was more likely to actively communicate with the public by using hyperlinks and hashtags. Consistent with previous findings, adopting interactive tools such as hyperlinks and hashtags contributes to generating more engagement and participation by disseminating information and creating synchronous, community-building conversations (Lovejoy & Saxton, 2012). Corresponding with the organization's tendencies, followers of the CDC Twitter account were also more likely to communicate with the CDC by retweeting, liking, and replying to tweets than followers of the KCDC Twitter account. Though the CDC seems to recognize both sound science and

effective public health communication as two imperative components in public health (Bernhardt, 2004), health communication efforts by the major public health agency in South Korea are still developing. This study's findings may indicate that limited health communication by some agencies is one of the reasons for differences in public health system development between the two countries, or vice versa.

Jha and associates (2016) indicated that creating appealing health messages is one of the major challenges in generating an interactive social media environment. Follow-up analyses showed that the KCDC tended to post more photos, videos, hashtags, and hyperlinks in 2017 than before this year, and the analysis showed that in 2017, the KCDC began putting more effort into using Twitter to communicate with the public. Considering that the KCDC is in the process of institutionalizing and updating its public health system after going through serious public health risks in recent years, enhancing health communication might be part of these efforts (Bernhardt, 2004).

Consistent with previous research (Bartlett & Wurtz, 2015; Paul & Dredze, 2011), the increase of communication during public health crises was significant in this study's findings. Further analyses show that the number of retweets, replies, and likes increased considerably from 1.28 (replies), 23.09 (retweets), and 12.15 (likes) to 2.54 (replies), 36.32 (retweets), and 16.42 (likes) during the global outbreaks of Ebola (Aug. 2014–Jun. 2015) and Zika (Jan. 2016–Sep. 2016) in the United States; and from 0.04 (replies), 1.8 (retweets), and 0.5 (likes) to 0.05 (replies), 14 (retweets), and 2.33 (likes) during MERS (Jun. 2015–Oct. 2015) in South Korea. These findings reconfirm the major surveillance role of the CDCs, the importance of health communication during a public health crisis, and Twitter's real-time interactive values in spreading information to and among various publics (Lazard, Scheinfeld, Bernhardt, Wilcox, Suran, 2015).

Conclusions, Limitations, and Future Research

Overall, this study contributes to the body of health communication literature by examining different styles of health communication by major public health agencies in two distinctive cultures. Cultural differences seem to predict different ways of communicating about public health issues. At the same time, it reflects the different cultures of the target audiences (Tang & Peng, 2015). Although this study explored what and how major health agencies in different cultures communicate, some differences cannot be explained by cultural factors alone. The two countries are positioned differently in terms of economic status and public health history. Future research may seek to explore what other factors may influence health communication and help form a robust public health system. This study's results suggest that what CDCs communicate and how they communicate influences and/or reflects public health surveillance systems.

This study has its limitations. First, because of limited availability of coders, intercoder reliability was calculated only from tweets of the CDC in the United States. This may lead to the impression of less accurate assessment of intercoder reliability. However, reliability scores were very high among the CDC tweets, and the same coder who analyzed the U.S. CDC tweets also analyzed the KCDC tweets. Second, when coding a tweet's health topic, the coders chose only one distinctive topic for each tweet. However, some tweets included multiple topics. There is a possibility that some topics were coded less frequently because only one topic was chosen. Finally, this study only examined the tweets of two organizations from two different countries. Coding additional social network services (SNS; e.g., Facebook) may provide more

robust results, and, of course, studying the health communication efforts of other countries could yield interesting results about various cultural dimensions. Future research should investigate whether the findings of this study are valid across various SNSs and study health communication coming from other countries' public health organizations. Though this study adds to existing research in the areas of health communication through SNS and considers culture as an important factor that both influences and reflects public health, more research is needed to continue to understand these topics. Particularly moving forward, following COVID-19, understanding health communication on a global scale is imperative, and international communication research can help.

References

American Cancer Society. (2018). *About breast cancer*. Retrieved from https://www.cancer.org/cancer/breast-cancer/about/how-common-is-breast-cancer.html

Avery, E., Lariscy, R., Amador, E., Ickowitz, T., Primm, C., & Taylor, A. (2010). Diffusion of social media among public relations practitioners in health departments across various community population sizes. *Journal of Public Relations Research*, *22*(3), 336–358. doi:10.1080/10627261003614427

Avery, E. J., & Graham, M. W. (2013). Political public relations and the promotion of participatory, transparent government through social media. *International Journal of Strategic Communication*, *7*(4), 274–291. doi:10.1080/1553118x.2013.824885

Baek, T. H., & Yu, H. (2009). Online health promotion strategies and appeals in the USA and South Korea: A content analysis of weight-loss websites. *Asian Journal of Communication*, *19*(1), 18–38. doi:10.1080/01292980802618064

Bartlett, C., & Wurtz, R. (2015). Twitter and public health. *Journal of Public Health Management and Practice*, *21*(4), 375–383. doi:10.1097/phh.0000000000000041

Baum, F. (1999). Social capital: Is it good for your health? Issues for a public health agenda. *Journal of Epidemiology and Community Health*, *53*(4), 195–196. doi:10.1136/jech.53.4.195

Bernhardt, J. M. (2004). Communication at the core of effective public health. *American Journal of Public Health, 94*(12), 2051–2052. doi:10.2105/ajph.94.12.2051

Betsch, C., Böhm, R., Korn, L., & Holtmann, C. (2017). On the benefits of explaining herd immunity in vaccine advocacy. *Nature Human Behaviour*, *1*(3). doi:10.1038/s41562-017-0056

Bingenheimer, J. B., Repetto, P. B., Zimmerman, M. A., & Kelly, J. G. (2003). A brief history and analysis of health promotion. In T. P. Gullotta & M. Bloom (Eds.), *Encyclopedia of primary prevention and health promotion* (pp. 15–26). Boston, MA: Springer.

Booz Allen Hamilton. (2009, July). *Social media and risk communications during times of crisis*. Retrieved from http://www.iptk.gov.my/doc/Risk-and-Crisis-Communications-Guide.pdf,2018

Breslow, L. (1999). From disease prevention to health promotion. *Journal of the American Medical Association*, *281*(11), 1030–1033. doi:10.1001/jama.281.11.1030

Castro, F. G., & Alarcon, E. H. (2002). Integrating cultural variables into drug abuse prevention and treatment with racial/ethnic minorities. *Journal of Drug Issues*, *32*(3), 783–810. doi:10.1177/002204260203200304

Cha, J. (1994). Aspects of individualism and collectivism in Korea. In U. Kim, H. C. Trandis, C. Kagitcibasi, S.-C. Choi, & G. Yoon (Eds.), *Individualism and collectivism: Theory, methods, and applications* (pp. 157–174). Thousand Oaks, CA: SAGE Publications.

Chandler, R. K., Fletcher, B. W., & Volkow, N. D. (2009). Treating drug abuse and addiction in the criminal justice system: Improving public health and safety. *Journal of the American Medical Association*, *301*(2), 183–190. doi:10.1001/jama.2008.976

Choi, B. C. (2012). The past, present, and future of public health surveillance. *Scientifica, 2012,* 1–26. doi:10.6064/2012/875253

Clinical and Translational Science Awards Consortium. (2011). *Principles of community engagement* (2nd ed.) (NIH Pub. No. 11–7782). Rockville, MD: U.S. Government Printing Office.

DeJong, W., Vince-Whitman, C., Colthurst, T., Cretella, M., Gilbreath, M., Rosati, M., & Zweig, K. (1998). *Environmental management: A comprehensive strategy for reducing alcohol and other drug use on college campuses*. Washington, DC: U.S. Department of Education, Higher Education Center for Alcohol and Other Drug Prevention.

Diddi, P., & Lundy, L. K. (2017). Organizational twitter use: Content analysis of tweets during breast cancer awareness month. *Journal of Health Communication*, *22*(3), 243–253. doi:10.1080/10810730.2016.1266716

Dixon, G. N., McKeever, B. W., Holton, A. E., Clarke, C., & Eosco, G. (2015). The power of a picture: Overcoming scientific misinformation by communicating weight-of-evidence information with visual exemplars. *Journal of Communication*, *65*(4), 639–659. doi:10.1111/jcom.12159

Dutta-Bergman, M. J. (2005). Theory and practice in health communication campaigns: A critical interrogation*. Health Communication, 18*(2), 103–122. doi:10.1207/s15327027hc1802_1

Fincher, C. L., Thornhill, R., Murray, D. R., & Schaller, M. (2008). Pathogen prevalence predicts human cross-cultural variability in individualism/collectivism. *Proceedings of the Royal Society of London B: Biological Sciences*, *275*(1640), 1279–1285.

Freimuth, V. S., & Quinn, S. C. (2004). The contributions of health communication to eliminating health disparities. *American Journal of Public Health, 94*(12), 2053–2055. doi:10.2105/ajph.94.12.2053

Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: The RE-AIM framework. *American Journal of Public Health*, *89*(9), 1322–1327. doi:10.2105/ajph.89.9.1322

Golbeck, J., Grimes, J. M., & Rogers, A. (2010). Twitter use by the U.S. Congress. *Journal of the Association for Information Science and Technology*, *61*(8), 1612–1621. doi:10.1002/asi.21344

Graham, M. W., Avery, E. J., & Park, S. (2015). The role of social media in local government crisis communications. *Public Relations Review*, *41*(3), 386–394. doi:10.1016/j.pubrev.2015.02.001

Grambsch, A., & Menne, B. (2003). Adaptation and adaptive capacity in the public health context. In A. J. McMichael, D. H. Campbell-Lendrum, C. F. Corvalan, K. L. Ebi, A. Githeko, & J. D. Scheraga (Eds.), *Climate change and health: Risks and responses* (pp. 220–236). Geneva, Switzerland: World Health Organization.

Gudykunst, W. B., & Lee, C. M. (2001). An agenda for studying ethnicity and family communication. *Journal of Family Communication, 1*(1), 75–85. doi:10.1207/s15327698jfc0101_09

Heldman, A. B., Schindelar, J., & Weaver, J. B. (2013). Social media engagement and public health communication: Implications for public health organizations being truly "social." *Public Health Reviews*, *35*(1), 1-18. doi:10.1007/bf03391698

Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Beverly Hills, CA: SAGE Publications.

Hofstede, G. (1991). Organisationer och kulturer [Organizations and cultures: About cross-cultural understanding]. Lund, Sweden: Studentlitteratur.

Hofstede, G., & Minkov, M. (2010). Long- versus short-term orientation: New perspectives. *Asia Pacific Business Review*, *16*(4), 493–504. doi:10.1080/13602381003637609

Jha, A., Lin, L., & Savoia, E. (2016). The use of social media by state health departments in the US: Analyzing health communication through Facebook. *Journal of Community Health*, *41*(1), 174–179. doi:10.1007/s10900-015-0083-4

Jiang, K., Barnett, G. A., & Taylor, L. D. (2016). Dynamics of culture frames in international news coverage: A semantic network analysis. *International Journal of Communication*, *10*, 3710–3736.

Johnson, S., & Miller, A. (2002). A cross-cultural study of immediacy, credibility, and learning in the U.S. and Kenya. *Communication Education*, *51*(3), 280–292. doi:10.1080/03634520216514

Ki, M. (2015). 2015 MERS outbreak in Korea: Hospital-to-hospital transmission. *Epidemiology and Health, 37*, e2015033. doi:10.4178/epih/e2015033

Kickbusch, I. (2003). The contribution of the World Health Organization to a new public health and health promotion. *American Journal of Public Health*, *93*(3), 383–388. doi:10.2105/ajph.93.3.383

Kim, H., Jang, S. M., Kim, S. H., & Wan, A. (2018). Evaluating sampling methods for content analysis of Twitter data. *Social Media + Society, 4*(2), 2056305118772836. doi:10.1177/2056305118772836

Kim, H. S., Sherman, D. K., & Updegraff, J. A. (2016). Fear of Ebola: The influence of collectivism on xenophobic threat responses. *Psychological Science*, *27*(7), 935–944. doi:10.1177/0956797616642596

Kim, J. (2010). *Korean Americans' online health information seeking and the role of online communities in the context of diabetes-related information search*. Master's thesis. University of Minnesota, Minneapolis.

Kim, J. W., Nam, K. H., Ahn, S. H., Park, D. J., Kim, H. H., Kim, S. H., . . . & Kim, J. H. (2016). Prognostic implications of immunosuppressive protein expression in tumors as well as immune cell infiltration within the tumor microenvironment in gastric cancer. *Gastric Cancer*, *19*(1), 42–52. doi:10.1007/s10120-014-0440-5

Korea Centers for Disease Control and Prevention. (2017). *About KCDC*. Retrieved from http://www.cdc.go.kr/contents.es?mid=a30101000000

Kreps, G. L., & Maibach, E. W. (2008). Transdisciplinary science: The nexus between communication and public health. *Journal of Communication, 58*(4), 732–748. doi:10.1111/j.1460-2466.2008.00411.x

Kreuter, M. W., Lukwago, S. N., Bucholtz, D. C., Clark, E. M., & Sanders-Thompson, V. (2003). Achieving cultural appropriateness in health promotion programs: targeted and tailored approaches. *Health Education & Behavior*, *30*(2), 133–146. doi:10.1177/1090198102251021

Kreuter, M. W., & McClure, S. M. (2004). The role of culture in health communication. *Annual Review of Public Health*, *25*(1), 439–455. doi:10.1146/annurev.publhealth.25.101802.123000

Lazard, A. J., Scheinfeld, E., Bernhardt, J. M., Wilcox, G. B., & Suran, M. (2015). Detecting themes of public concern: A text mining analysis of the Centers for Disease Control and Prevention's Ebola live Twitter chat. *American Journal of Infection Control*, *43*(10), 1109–1111. doi:10.1016/j.ajic.2015.05.025

Lee, S., & Paik, J. E. (2017). How partisan newspapers represented a pandemic: the case of the Middle East respiratory syndrome in South Korea. *Asian Journal of Communication*, *27*(1), 82–96. doi:10.1080/01292986.2016.1235592

L'Etang, J. (2008). *Public relations: Concepts, practice and critique*. London, UK: SAGE Publications.

Lin, J. S., & Peña, J. (2011). Are you following me? A content analysis of TV networks' brand communication on Twitter. *Journal of Interactive Advertising*, *12*(1), 17–29. doi:10.1080/15252019.2011.10722188

Liu, B. F., Austin, L., & Jin, Y. (2011). How publics respond to crisis communication strategies: The interplay of information form and source. *Public Relations Review*, *37*(4), 345–353. doi:10.1016/j.pubrev.2011.08.004

Lovejoy, K., & Saxton, G. D. (2012). Information, community, and action: How nonprofit organizations use social media. *Journal of Computer-Mediated Communication, 17*(3), 337–353. doi:10.1111/j.1083-6101.2012.01576.x

Mao, Y., & Yuxia, Y. (2015). Facebook use and acculturation: The case of overseas Chinese professionals in Western countries. *International Journal of Communication*, *9*, 2467–2486.

Messonnier, M. L. (2006). Economics and public health at CDC. *Morbidity and Mortality Weekly Report, 55*(2), 17–19.

Mollema, L., Harmsen, I. A., Broekhuizen, E., Clijnk, R., De Melker, H., Paulussen, T., . . . & Das, E. (2015). Disease detection or public opinion reflection? Content analysis of tweets, other social media, and online newspapers during the measles outbreak in The Netherlands in 2013. *Journal of Medical Internet Research*, *17*(5). e128. doi:10.2196/jmir.3863

Neuendorf, K. (2002). *The content analysis guidebook.* Thousand Oaks, CA: SAGE Publications.

Newman, K. L., & Nollen, S. D. (1996). Culture and congruence: The fit between management practices and national culture. *Journal of International Business Studies, 27*(4), 753–779. doi:10.1057/palgrave.jibs.8490152

Nutbeam, D. (1998). Evaluating health promotion—Progress, problems and solutions. *Health Promotion International*, *13*(1), 27–44. doi:10.1093/heapro/13.1.27

Oaten, M., Stevenson, R. J., & Case, T. I. (2009). Disgust as a disease-avoidance mechanism. *Psychological Bulletin*, *135*(2), 303–321. doi:10.1037/a0014823

Odlum, M., & Yoon, S. (2015). What can we learn about the Ebola outbreak from tweets? *American Journal of Infection Control*, *43*(6), 563–571. doi:10.1016/j.ajic.2015.02.023

Park, H., Reber, B. H., & Chon, M. G. (2016). Tweeting as health communication: Health organizations' use of twitter for health promotion and public engagement. *Journal of Health Communication*, *21*(2), 188–198. doi:10.1080/10810730.2015.1058435

Pasick, R. J., D'onofrio, C. N., & Otero-Sabogal, R. (1996). Similarities and differences across cultures: Questions to inform a third generation for health promotion research. *Health Education Quarterly, 23*(Supp. 1), 142–161. doi:10.1177/109019819602301s11

Paul, M., & Dredze, M. (2011, July). *You are what you tweet: Analyzing Twitter for public health.* Paper presented at the 5th International AAAI Conference on Weblogs and Social Media (ICWSM 2011), Barcelona, Spain.

Ramanadhan, S., Mendez, S. R., Rao, M., & Viswanath, K. (2013). Social media use by community-based organizations conducting health promotion: A content analysis. *BMC Public Health*, *13*(1), 1129. doi:10.1186/1471-2458-13-1129

Rocheleau, M., Sadasivam, R. S., Baquis, K., Stahl, H., Kinney, R. L., Pagoto, S. L., & Houston, T. K. (2015). An observational study of social and emotional support in smoking cessation Twitter accounts: Content analysis of tweets. *Journal of Medical Internet Research*, *17*(1), e18. doi:10.2196/jmir.3768

Samadi, D. (2015). *October is breast cancer awareness month*. Retrieved from https://samadimd.com/cancer/october-is-breast-cancer-awareness-month

Shim, J. (2008). Social networking sites: A brief comparison of usage in the U.S. and Korea. *Decision Line*, *39*(5), 16–18.

Skolnick, A. J., & Dzokoto, V. A. (2013). Disgust and contamination: A cross-national comparison of Ghana and the United States. *Frontiers in Psychology, 4.* doi:10.3389/fpsyg.2013.00091

Statista. (2018). *Number of active Twitter users in leading markets as of May 2016.* Retrieved from https://www.statista.com/statistics/242606/number-of-active-twitter-users-in-selected-countries/

Sun, T., Horn, M., & Merritt, D. (2009). Impacts of cultural dimensions on healthy diet through public self-consciousness. *Journal of Consumer Marketing*, *26*(4), 241–250. doi:10.1108/07363760910965846

Tang, L., & Peng, W. (2015). Culture and health reporting: A comparative content analysis of newspapers in the United States and China. *Journal of Health Communication*, *20*(2), 187–195. doi:10.1080/10810730.2014.920060

Thomas, S. B., Fine, M. J., & Ibrahim, S. A. (2004). Health disparities: The importance of culture and health communication. *American Journal of Public Health, 94*, 2050–2050. doi:10.2105/ajph.94.12.2050

U.S. Surgeon General. (2001). *Mental health: Culture, race, and ethnicity—A supplement to* Mental Health: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services.

Wolinsky, H. (2010). Salty diet tied to stomach cancer in Korean study. *Reuters*. Retrieved from https://www.reuters.com/article/us-salty-diet/salty-diet-tied-to-stomach-cancer-in-korean-study-idUSTRE62N4KX20100324

World Health Organization. (2019). *Ten threats to global health in 2019*. Retrieved from https://www.who.int/news-room/feature-stories/ten-threats-to-global-health-in-2019

Yoo, W., Choi, D. H., & Park, K. (2016). The effects of SNS communication: How expressing and receiving information predict MERS-preventive behavioral intentions in South Korea. *Computers in Human Behavior*, *62*, 34–43. doi:10.1016/j.chb.2016.03.058

Zhang, M., Jansen, B. J., & Chowdhury, A. (2011). Business engagement on Twitter: A path analysis. *Electronic Markets*, *21*(3), 161–175. doi:10.1007/s12525-011-0065-z