Emergency awareness for animals: a Korean experience

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ABSTRACT
Despite the significant number of animals or the high frequency of animal-related emergencies, Korea remains in the middle of emergency unawareness when it comes to handling the animals. The goal of this article is to examine how emergency unawareness for animals in Korea can be improved for the ultimate goal of emergency management. This article used qualitative content analysis as the major methodology. A careful comparison between emergency unawareness and emergency awareness for animals was done by cross-examining various animals and major stakeholders. One major finding is that the nation must turn its finger on that Korea needs to recognize and strengthen the need for emergency awareness toward animals that are affected by emergencies (e.g., rescuing of pets during natural disasters like typhoons with flooding) as well as toward animals that caused and at the same time that are affected by emergencies (e.g., bird flu). Neighbouring nations may learn the significance of comprehensive emergency management for their animal emergency issues. This research is valuable because it used a more comprehensive perspective on animal issues compared with similar studies.

1. Introduction
South Korea (hereinafter Korea) was observed to have unique characteristics in terms of emergency awareness for animals. As such, it is difficult to record the exact number of various animals in Korea, mainly because some animals move in different locations or the number of animals is steadily changing. As of 2016/2017, Korea had a huge number of diverse animals, such as 3.5 million cows, 10 million pigs, 80 million chickens, 7 million ducks, 112 kinds (e.g., mammals, birds, and invertebrate animals) of wild animals, 10 million pets (e.g., cats and dogs), and 250 guide dogs, among others (E-Nara Index 2017; KOSIS 2018). Similarly, Korea recently faced many animal emergencies, such as animal bites, a series of fires in cattle barns, Middle East Respiratory Syndrome (MERS) in 2015, foot-and-mouth disease in 2017, the admission of pets to emergency shelters after the Pohang earthquake at the end of 2017, avian influenza in recent years, among others (MOIS 2018). Accordingly, government officials have frequently maintained that their institutions have made all efforts to improve awareness toward animal emergencies. Also, some researchers have publically complimented the positive aspects of the government’s policy for animal emergency awareness.
Nonetheless, after experiencing multiple emergencies, quite a few emergency management practitioners have doubted whether Korea will not be impacted by a series of animal emergencies in the near future. They have also pointed out the negative aspects of animal emergency awareness. To some degree, the public has been numb on animal emergencies, mainly because they are as if a normal occurrence or annual activity (PETA 2011). Further, almost no rigorous research has been carried out to examine the issue of Korean animal emergency or emergency awareness for animals from a comprehensive perspective, contrary to the government’s contention.

Given the situation and experiences thus far, it will be challenging to study the reality of Korean emergency awareness. This study is expected to provide a lesson(s) learned to benefit Korea and for neighbouring nations as well in terms of handling of future animal emergencies in the region. When addressing emergency awareness for animals, most practitioners have often recommended to expect the worst regardless of the national boundary (Verdon 2011). This article aims to study how Korea has to enhance its emergency awareness for animals for the welfare of animals as well as that of people. In the process, this study compared two approaches, specifically emergency unawareness and emergency awareness for animals via cross-checking three kinds of animals (e.g., cattle, wild animals, and pets) and four stakeholders (e.g., governments, industry, mass media, and local residents). The biggest finding is that the nation must turn its current emergency unawareness into emergency awareness for animals. Similarly, neighbouring nations are encouraged to ensure the application of emergency awareness into their comprehensive emergency management.

2. Literature review
The emergency discussed in this article includes not only natural disasters but also manmade emergencies that involve or affect animals. In this study, a major discussion was on
three kinds of animal emergencies, namely animal evacuation, animal relocation, and epidemiological emergencies. Emergency management, as government a role, is the management of various emergencies for the welfare of the public with strong support from close partners, such as businesses, voluntary organizations, mass media, military, and other local communities (USAID 2011). Therefore, emergency management may be considered a public good or public service.

In the field of emergency management, animals are treated in several ways (Grandjean 2018). As such, animals have frequently been described as emergency victims, while also being the issue of feedstuff such as pet food. Animal carcasses can pose danger to health. On the other hand, there are numerous stories where animals saved lives, such as the function of search-and-rescue dogs; there are also those who serve as guide animals, especially guide dogs.

Similarly, the issue of animal emergency has been influenced by various critical factors (Honhold et al. 2011). Diverse factors include emergency planning, stakeholders’ roles and responsibilities, emergency management resources, national emergency management structure, compensation policy, legalization, inspection, and timing, among others. These factors have directly or indirectly influenced the size, the frequency, and the duration of the animal emergency, making the issue quite complicated.

Emergency management has its own cycle or four phases of emergency management lifetime. They are emergency prevention/mitigation, preparedness, response, and recovery (Habitat for Humanity 2012). These four phases are a continuous process in the field of emergency management.

Some beginners might think that the subphase of emergency awareness under the phase of emergency preparedness would be situated before the occurrence of emergency. However, they are not exactly correct, as shown in Table 1. The subphase of emergency awareness lasts the whole period of emergency management lifetime, which is before, during, and after the occurrence of emergency.

The subphase of emergency awareness is significant for all kinds of animals, especially those that are huge, need special shelters, require transport, and may endanger others due to diseases (The Human Society 2008). It is necessary for the field to take appropriate precautions, and so, it is important to recognize and prepare for the potential animal emergency.

Emergency awareness for the people has taken precedence over that of emergency awareness for animals, regardless of national boundary. Nonetheless, because of various factors, such as economic benefit, food safety reason, health matter, emotional impact, international trade barriers, or environmental concern, animal welfare remains important to the field of emergency awareness for the people. As empirical evidence, more than 60% of U.S. pet owners responded that their pets are extremely significant to their whole families (EMI 2015a).

The issue of emergency awareness for animals cannot be completely separated from that of emergency awareness for human beings. Rather, these are interconnected, when thinking that people live with animals in the same space or on Earth (EMI 2015b). Also, there is a strong bond between animals and humans. Therefore, to address the issue of emergency awareness for animals, the whole field of emergency management should also facilitate the issue of emergency awareness for human beings in many aspects.

In reality, people, in various roles, have spent much time dealing with diverse animals (Dwyer 2016). Some are cattle people; some are pet owners. In addition, wild animals play a role in balancing the ecosystem. In short, human beings have strongly depended on animals one way or another.

With the foregoing, this article suggests two kinds of awareness for animals. First, the full extent of emergency awareness includes emergency planning, coordination of thorny issues, training and exercise, and the allocation of emergency equipment (Town of Upton Massachusetts 2018). When fully addressing emergency awareness, stakeholders will be able to survive on their own for a certain period particularly before outside support becomes available. Indeed, emergency awareness is essential for the emergency management of animals.

Second, emergency unawareness means the condition of being unaware or uninformed regarding the occurrence of an emergency (Kamal et al. 2013). Various alternatives may be performed in the field, but those are not directly related to the issue of emergency or its management. People may be unconscious or unaware of diverse emergencies due to potential challenges, such as the lack of education, financial burden, politics, and culture. Without regard for the goal of emergency management, other means not fully addressing the emergency may be carried out in advance or just before the occurrence of emergency. Clearly, emergency unawareness is not required or unacceptable for emergency management of animals.

While considering the differences between emergency awareness and emergency unawareness, the field of emergency preparedness (or emergency awareness) for animals in many developed nations has made efforts to fully understand all kinds of hazards. For example, when an animal disease causes diseases to other animals and to humans, the field has always paid attention to awareness or preparation for both various animal diseases and zoonosis simultaneously (National Institute of Communicable Diseases 2005).

Moreover, all stakeholders need to participate in emergency awareness (Hystad and Keller 2008). One or two sectors will not be able to fully cope with the requirements. As such, various professionals are encouraged to take an active part in managing emergency awareness for animals.

Animal emergency causes various risks, such as human loss, economic damages, and psychological impact (Twigg 2004). In extreme cases, an animal emergency can extend to or affect human society, and thus, unexpectedly results in a few mortalities. Also, it is clear that an animal emergency has a negative influence on the local economy or even the national economy. Further, an animal emergency has a psychological impact on human society as people witness the loss of lives, animal carcass, among others.

Table 1. Chronological order of the subphase of emergency awareness.

| Subphase of emergency awareness | Before emergency | During emergency | After emergency |
|---------------------------------|------------------|-----------------|----------------|
|                                 | √                |                 |                |

Source: (FEMA 2009).
While addressing emergency awareness for animals, the field of emergency management may reduce three kinds of related risks to a certain extent. For example, with heightened emergency awareness for animals, the financial burden on animal care decreased compared to the experience during emergency response or that of emergency recovery (NSW Government 2014). Also, the reduction of economic damages is more visible than the reduction of human loss or that of psychological impact.

Following their own expertise, many accredited researchers have studied how to deal with emergency management for animals, such as animal diseases, animal welfare, human factors, disaster response, social vulnerability, international laws, among others (Perecedo et al. 2013; Wada et al. 2017). Some researchers have approached animal emergency awareness under the category of case studies; others have theoretically studied the aspect of emergency awareness for animals in their own regions. In particular, many institutions have provided guidelines on how to deal with animal emergency awareness.

In Korea, a few researchers have systematically focused on the topic of animal diseases, such as avian influenza and foot-and-mouth disease when they broke out in the region in recent times (Lee et al. 2017). However, it does not mean that they have similarly examined the issue of emergency management for animals. Further, they have not rigorously studied the topic of emergency awareness for animals either. Hence, this article has a potential value in terms of research agenda. In particular, this article will attempt to study the topic of emergency awareness for animals in Korea more comprehensively than previous Korean studies.

3. Methodology

This study used qualitative content analysis. Certain text data were searched from various Internet search engines. The data collected were then recorded, analyzed, and interpreted. To elaborate, Internet search engines used included internationally recognized ones, such as Google.com, EBSCOhost (ASC), Yahoo.com, among others. Both Google.com and EBSCOhost have uploaded many related data on the topic, such as articles, government documents, books, websites, and others, compared with other search engines. Several keywords, such as ‘animals and disaster’, ‘animals and disaster awareness’, and ‘Korea and animal disaster’, were used.

This article has structured its analytical framework, following Figure 1. Comparing emergency unawareness and emergency awareness for animals, this article included all animals in the scope of the study. Surely, animals may be classified differently depending on individual perspectives. One example is that animals include livestock, service (or companion) animals, household pets, marine animals, exhibition animals, and laboratory animals.

Based on the comprehensive literature review, this article classified animals in Korea into three important categories: (a) cattle, (b) wild animals, and (c) pets. Similar to other countries, Korea has many cattle and pets. Also, mainly because the number of service animals is not high in Korea, this article will not focus on the issue. Rather, when thinking that wild animals have caused foreign animal diseases in recent times, this article included cattle, wild animals, and pets in this order.

For the abovementioned three kinds of animals, various stakeholders in the field have tried to carry out their own roles and responsibilities. In this regard, this article has also attempted to classify all stakeholders in Korea, based on the extensive literature review. This article also covers the four major stakeholders, namely (1) governments, (2) industry, (3) mass media, and (4) local residents. This article will study how each them should work and approach the three kinds of animals in Korea.

Each stakeholder is an important key player in the field of animal emergency management. The government is expected to provide support and lead its people. The industry, including animal owners and veterinarians, also provides support to people and animals in the practice of their profession. Further, the mass media cover and report relevant news for people to be informed and to take action. Lastly, local residents, including pet owners, meet buyers, and the general public, connect communities and animals alike within the environment.

4. Emergency unawareness for animals

4.1. Governments

At the central level, the Ministry of Agriculture, Food and Rural Affairs (MAFRA) supports the management of various animals in Korea. However, MAFRA has not carried out any campaigns on emergency awareness for cattle and pets; the institution lacks familiarity with the concept of modern emergency awareness or preparedness (MAFRA 2018). Meanwhile, the Ministry of Interior and Safety (MOIS) is supposed to take care of all hazards including those against various animals. However, it has included only people into its national emergency operation plans (EOPs) while managing fires and typhoon accompanied by flood.

Various local governments manage to disinfect sources of animal diseases, such as avian influenza and foot-and-mouth disease. However, their efforts via the Federation of Livestock Cooperatives are related to the phase of an emergency response, rather than on awareness. Given that such diseases hit many local communities yearly, local governments are considered to have failed to address emergency awareness. Moreover, fire stations are also involved in the rescue of isolated pets or wild animals, despite the non-inclusion of animals into their operation relative to natural disaster prevention, similar to MOIS.

4.2. Industry

At the local level, owners of animal farms are supposed to be aware of or prepare for all kinds of hazards for their farms. However, most Korean farms have limited spaces in their sizes, such as cows in a barn with chickens in a small cage. Owners benefit financially from their cattle despite the limited or filthy environment. To some extent, this is reflective of how owners have failed to fully address animal welfare or rights, which in the end, may have contributed to the outbreak of animal diseases.

In terms of profession, veterinarians and researchers in the field have dramatically expanded their activities in the region,
given that the number of animals, such as pets and cattle, has sharply increased in the twenty-first century. However, research on domestic animal diseases or foreign animal diseases (e.g. H5 strain of avian influenza via moving birds) has been very limited (Yonhap 2017), particularly due to insufficient funds and international cooperation.

4.3. Mass media

In the past, mass media have not had serious or comprehensive coverage on the issue of animal welfare (Lee 2017). However, the trend has extraordinarily changed. Various means of media handling, such as TV, Internet, mobile phones, among others, have reported multiple stories about animals, including the attack by hungry wild boars of agriculture farms, the dangers of street or stray dogs or cats, the recovery of native animals in mountain areas, and the haven of wild animals in a demilitarized zone (DMZ).

Despite the fact that mass media have not distributed information on emergency awareness for animals, they still broadcasted information on how to respond to the appearance of wild animals or the outbreak of zoonosis in communities (e.g. MERS in 2015). Without mentioning related emergency awareness, mass media focused on breaking news on animals.

4.4. Local residents

Generally speaking, pet owners lack or have insufficient understanding of animal emergency. For example, during the earthquake in Pohang in 2017, pet owners had arguments with other victims and authorities regarding allowing their pets to stay with them in the shelters. Moreover, some pet owners refused to claim responsibility for incidents of animal bites that can cause allergic reaction, rabies, or phobias, if not treated in time.

Most local residents buy and eat animal meats from butchers or animal farms. Meat buyers are generally aware of animal diseases, primarily because those pandemic diseases have broken out in Korea almost yearly (Kim 2017). During Korean Thanksgiving Day or other holidays, many locals no longer travel to their hometowns to minimize, if not contain, the spread of viruses. Additionally, in Korea, most of the service animals are guide dogs for the blind and their owners have not had any serious incident during animal emergencies.

5. Emergency awareness for animals

5.1. Governments

Clearly, an emergency may happen to anybody and to animals. Thus, MAFRA needs to recognize this to enable implementation of related emergency awareness (e.g. emergency planning, training and exercise) for wild animals, cattle and pets. Similarly, MOIS must fairly include not only the people but also animals into its national EOPS while actively associating with MAFRA (FAZD Center 2011). For animals, MOIS must continue to prepare for other hazards, as well as fires and typhoon that cause flooding.

The Federation of Livestock Cooperatives must continue to deal with the sources of animal diseases, such as viruses or
their mutation throughout the emergency management lifetime. Institutions with low responsiveness during the outbreak of animal diseases should not be the norm. Additionally, natural disaster prevention management, also fire stations in the region, needs to consider animal welfare as well. Also, local governments could initiate the inclusion of animals into their operations, without waiting for the central government’s revised policy.

5.2. Industry

Without animal welfare or rights, it would be hard for owners of animal farms to address related emergency awareness against all hazards (Ock 2016). For instance, without parks and clean environment and without proper care, pet animals and cattle could cause a pandemic. Therefore, owners of animal farms should take appropriate action to ensure proper disposal of animal carcasses or remains. Addressing animal welfare in the long term is essential if owners are concerned about the continuance of their financial benefit as well.

Veterinarians and researchers, in collaboration with animal farm owners and government authorities, need to gather more funds for animal research funds. Additionally, conducting joint research and international partnerships, as opposed to individual research, and petitioning foreign aid may bear more fruit and answers to strengthen animal awareness.

5.3. Mass media

Mass media coverage on topics about animals, such as wild boars, street cats, wild dogs, and DMZ have been much more diversified now than in the past. This is good as it will allow the public to learn more about and show more interest in recognizing animal issues. However, mass media need to broadcast each topic in a systematic way, elaborating on relevant issues before, during, and after animal emergencies.

For improvement opportunities, mass media are encouraged to consult with a public information officer (PIO) in each animal emergency to get relevant information on emergency awareness. The PIO will prove helpful to mass media regarding accurate information on animal emergency or any incident (Hughes 2012).

5.4. Local residents

Owners of service and pet animals should have a plan for their animals in terms of shelter during an emergency. They need to work and verify with government authorities or other emergency victims to ensure common understanding or agreement. Owners should also be responsible in terms of accountability and liability in cases of animal bites and the like.

Moreover, pet owners need to prepare emergency kits for animals including extra labels for animals, cleanup materials for animal waste, animal food, animal medication, and among others (CDART 2010). In addition, even though meat buyers are local residents and have a high degree of animal emergency awareness, they are all psychologically impacted by animal death, culling, animal carcasses, and so on. Thus, meat buyers need to prepare for how to overcome psychological impact by relying on standardized psychological therapy.

6. Implications and recommendations to neighbouring nations

The ideal emergency awareness for animals starts from the individual level in local communities, as individuals have a responsibility towards animals in facilitating identification, prioritization, and even mitigation of animal issues during an emergency. From the individual level, awareness should spread to other stakeholders. With diverse stakeholders working together in the field of animal emergency awareness, more appropriate programmes for a local community’s needs may be developed.

Similarly, many individual stakeholders have a certain extent of motivation to be aware of or even prepare for various emergencies for animals. Preparedness motivation is recognizing and assessing potential dangers around animals and addressing related alternatives. Further, many individuals also have a certain degree of motivation to expand related emergency awareness to others (Westcott et al. 2017).

On a macro viewpoint, the number of animal species on Earth is estimated to be at 1 to 2 million and a guesstimate of the number of animals on Earth is 20 quintillion. Also, about 1 billion people make their living one way or another through the cattle industry (Team 2017). On another note, the Earth’s temperature has increased by about 1°C compared with the temperature by the end of the eighteenth century. With the continuing climate change, biodiversity loss or biological disruption is likely in the near future (IFAW 2009). Thus, the issue of animal emergency is also likely to continue to be a concern for the international community.

In the international community, several major institutions work on animal emergency awareness. Examples are the World Health Organization, the Food and Agriculture Organization of the United Nations, the United Nations International Strategy for Disaster Reduction, the World Animal Protection, and the International Fund of Animal Welfare (Ricketts 2015). These organizations are in the position to expand relevant networks among all nations by using information and communication technologies, when possible.

When citing the case in Korea, it is inevitable for neighbouring nations to realize the importance of comprehensive emergency management or related emergency awareness; this is a major lesson learned. Comprehensive emergency management includes four factors (i.e. all kinds of hazards, all stakeholders, four phases of emergency management lifetime, and all risks) whose goal is to protect people as well as animals (Heath and Linnabary 2015).

The lack of each of the four factors has been directly or indirectly identified during the comparison between emergency unawareness and emergency awareness for animals in Korea. Therefore, neighbouring nations, such as China, Japan, Taiwan, North Korea, and Southeast Asian nations, need to ensure the practice of comprehensive emergency management for their animals, specifically a comprehensive emergency management for the region.
Neighbouring nations may identify and then implement appropriate measures for each phase of emergency management lifetime on the way to comprehensive emergency management. In terms of emergency prevention, relevant laws and regulations may be enacted. Also, governments can conduct a series of inspection activities and simulation to address animal evacuation and relocation and other preventive measures against pandemics (Hasani et al. 2018). Regarding emergency mitigation, for animal emergencies that may have some degree of predictability, government institutions should be able to inform the public via official channels including conferences and seminars, with the support of the animal industry and other stakeholders.

In the viewpoint of emergency preparedness, farm owners should purchase and maintain animal vaccines, personal protection equipment, and other materials in advance. With regard to emergency response, residents must follow the government’s evacuation order, while emergency responders accomplish their tasks on the ground. On emergency recovery, owners of animal farms or restaurants should have appropriate insurances for animal emergency to aid in their finances, particularly for long-term recovery.

At present, two alternatives, among many, have been widely supported in the international community. First, EOPs are traditionally for all hazards and may have a set of procedures as supplements (Dement 2005). In this regard, each nation needs to incorporate the treatment or management of animals into various EOPs, regardless of the type of hazard or emergency. As stakeholders develop EOPs, they should also ensure that the area of emergency awareness is included in a plan and that the plan should be able to deal with each specific animal hazard and its associated how’s and who’s.

Second, the practice of training and exercising for animal emergency, just after planning, is necessary, as impacts to affected nations could be catastrophic without its implementation. In fact, planning is one thing, and training and exercise are another. So, planning should be supplemented by training and exercise. Also, two kinds of training are heavily supported in the field, such as discussion-oriented training and operation-oriented training. When problems occur in training and exercise, they become opportunities for improvement of the same.

After addressing emergency planning, training and exercise, and other regional alternatives, each neighbouring nation must not treat emergency awareness for animals as a temporary issue but as a part of the regular dynamics of overall emergency management to maintain or sustain (FEMA and American Red Cross 2004). Consequently, more details on animal emergency awareness would be more systematically planned, executed, evaluated, and improved on a regular basis.

7. Conclusion

This article aimed to provide a model of emergency awareness for animals, after investigating the reality of emergency unawareness for animals in Korea, and this goal was achieved. Systematic comparison among factors affecting awareness was undertaken. A key theme of the article is that Korea must decisively change its emergency unawareness for animals into emergency awareness for animals for the ultimate goal of emergency management, such as reducing human loss, economic damages, and psychological impact. To do so, the four stakeholders, namely governments, industry, mass media, and local residents, need to assume their roles and accomplish their responsibilities (emergency planning, animal rights, contact with PIO, psychological impact, etc.). Without the voluntary participation of all stakeholders, the nation may not succeed in its goal of emergency awareness for animals.

Depending on their perspectives, neighbouring nations may learn several lessons from the case in Korea. Among many, this article recommends that neighbouring nations recognize the importance of animal emergency awareness as an integral part of comprehensive emergency management. As a basic condition on a national level, animals and people should be in the scope of the same emergency awareness.

This article has many advantages. One of the biggest advantages is that this article approached the issue of animal emergency awareness in Korea more comprehensively than what previous studies did. Although a few Korean scholars have discussed the issue of animal emergency, they have focused on the topic within their own expertise, in particular, animal pandemic diseases. In this article, the whole scheme of animal emergency awareness has been covered extensively.

In future studies, researchers in the field may use the results of this article for individual purposes. This article also suggested a national frame for the Korean field, so Korean scholars can further examine each barrier or option in their research. International researchers may apply the frame of this article to cases in their own countries. While working in various directions on animal emergency awareness, researchers can provide more realistic alternatives in the international field of animal emergency.

Disclosure statement

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