Report on “Radiation Disaster Recovery Studies“

Course : Radioactivity Social Recovery Course
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Regarding“Radiation Disaster Recovery Studies”

Radiation sources can be broadly divided into those that are created by humans and those that exist in nature. The former provides convenience to human society in nuclear energy and medical fields. However, this type of radiation can have serious effects on the environment, health, society, and the economy, as in the cases of the Chernobyl and Fukushima Daiichi nuclear power plant accidents.

Radiation disasters can severely damage people’s physical and mental health. In particular, effects on mental health are harder to grasp than those on physical health, as in the former they hardly manifest as physical symptoms. According to the Fukushima Center for Disaster Mental Health (2019), the severe trauma following the Great East Japan Earthquake and the nuclear accident in Fukushima Prefecture runs deep and psychosocial problems continue to be experienced. They insisted that those affected would require at least 30 years of mental health care. Maeda, Oe, & Suzuki (2018) reported that the impact of the Fukushima Daiichi nuclear power plant accident may be even more devastating on residents’ mental health; this case is an example of the psychosocial problems that are caused by a nuclear power plant accident. The effects included not only post-traumatic responses but also chronic psychiatric symptoms, such as depression and alcohol abuse, which can also contribute to self-destructive behavior that can lead to suicide.

One of the reasons behind the trauma experienced by radiation victims may be separation from their pets. Kajiwara (2019) interviewed pet owners affected by the Great East Japan Earthquake and reported that the loss of animals during the evacuation brought “uncontrollable grief.” Matsumoto and Sakata (2019) also conducted semi-structured interviews with pet owners who were evacuated owing to the effects of the Fukushima Daiichi accident. Many owners who could not evacuate their pets suffered psychological distress; they worried about their pets’ well-being until they could confirm that their pets were protected. According to the Ministry of the Environment (2018), the perception that pets are family members has recently become common. Therefore, performing evacuation with pets is important not only from the viewpoint of animal welfare, but also to preserve the mental health of the pet owners.

In particular, a radiation disaster is one that is likely to cause separation between humans and their pets. In case of a nuclear power plant accident, once designated as a warning area, it may be difficult to enter homes because of the effects of radioactive contamination, or evacuation may be prolonged by decontamination efforts. Kawamata (2014) reported that most owners who were evacuated after the Fukushima Daiichi Nuclear Power Plant had to leave behind their pets at home.

After the warning area was established, access was severely restricted, making it impossible for the owners to return home and protect their animals. Even if the owners were able to evacuate with their pets, they still faced problems living at the shelters, where they shared spaces with many other evacuees who did not like animals or had pet allergies (Ministry of the Environment, 2018).
In the accident at the Chernobyl nuclear power plant, a forced emergency evacuation of residents was carried out, and many dogs and cats were left behind. Soviet troops were ordered to shoot and kill wandering dogs (Taylor, 2018).

Evacuation with pets during a disaster was recommended after the Great East Japan Earthquake and it applied not only to radiation disasters. However, only 32.8% of the public responded as being aware that the Ministry of the Environment has recommended owners and pets to evacuate together during a disaster (Matsumoto, Sakata, & Sugiura, 2016). Therefore, knowledge of evacuation with pets has not been broadly disseminated.

Therefore, our doctoral dissertation examined the factors that facilitate or inhibit evacuation behavior with pets, including evacuating with pets. This study considered evacuation behavior during general disasters, but the findings can be applied in the event of a radiation disaster. The presence of pets is important from the perspective of the owner's mental health. For the pet owners, evacuating with their pets so that the pets are not left behind or left to die is an important and basic measure for mental rehabilitation.

As long as humans produce and use radiation, we must establish measures to handle the worst. Therefore, experts in all fields are expected to solve problems with cross-sectoral knowledge.
We hope that the present findings would contribute to the practice of experts in other fields, such as mental health and sociology, disaster managers in local governments, and general pet owners and non-owners. Moreover, we hope that our results will be used effectively to create a system that allows humans and pets to evacuate together during disasters without impairing adaptation.

Title of Doctoral Thesis

A Study of Factors Affecting Evacuation Behavior with Pets in a Disaster

Summary of Doctoral Thesis

Pets, such as dogs and cats, which live with people, have been recently called companion animals. Pets can become companions and family members, and their psychological distance to humans is getting closer (Ando, Taneichi & Kaneko, 2006）.

When a nuclear power plant accident occurs, not only humans but animals as well are affected. For example, in the accident at the Chernobyl nuclear power plant, a forced emergency evacuation of residents was carried out, and many dogs and cats were left behind. Soviet troops were ordered to shoot and kill wandering dogs (Taylor, 2018). Surviving dogs become wild, and some of

these dogs breed by receiving food from workers at nuclear power plants. Recently, dogs have been adopted by new owners after volunteer groups and veterinarians have performed their dose, health checkups and have got them neutered (Newsweek, 2018). In the Fukushima Daiichi Nuclear Power plant accident following the Great East Japan Earthquake, many pets were left behind at home or wandered away from their owners. This was because of the forced emergency evacuation in Fukushima prefecture, a designated warning area, due to which owners had difficulty evacuating with their pets (e.g., Hiranoi, 2014; Kawamata, 2014). The Ministry of the Environment formulated the "Disaster Preparedness Guideline for Humans and Pets" in 2018. The guidelines state that the self-help of pet owners is fundamental in dealing with disasters.

This study examines the psychological factors that facilitate or inhibit positive attitudes toward evacuation with pets for non-owners as well as pet owners. Furthermore, we focus on the psychological relationship between the owner and the pet and how to keep the pet, and examine the factors that facilitate or inhibit the preparations for pets by the owner. Specifically, we examine the effects of "Thinking of pets" (perception, concept and attitude) on evacuation behavior and preparations for pets during a disaster.

Study 1 examined the psychological factors in general public that facilitate or inhibit positive attitudes while evacuating with pets and living with pets in shelters or temporary housing during disaster-induced emergencies. Results indicated that in non-owners', the "Concern for other people" inhibited "Co-evacuation with pets" and "Willing to accept others' pets during evacuation and in shelters", whereas it didn't affect the attitudes of owners. Moreover, "Treating pets as equal to humans", and having an "Equal status", facilitated "Co-evacuation with pets" and "Willing to accept others' pets during evacuation and in shelters" by pet owners and non-owners.

In Study 2, with the aim of furthering preparations for pets in the event of a disaster, we conducted an exploratory investigation of the factors that facilitate or inhibit disaster preparation for pets and examined how the psychological relationships between pets and owners affects the degree of execution for "preparedness in everyday life" and "preparing for disasters." We found that the "number of pet friendships" (friends made through interactions because of one's pet) facilitated "preparedness in everyday life" and "preparing for disasters." Moreover, the "degree of animal welfare practice" facilitated "preparedness in everyday life", and the degree of "difficulty being separated from pets" facilitated "preparing for disasters."

In Study 3, (1) we clarified the concept of "Treating pets as equal to humans", which largely influenced Study 1 that examined the relationship between "Treating pets as equal to humans" and various other thinking of pets and knowledge. (2) For example, among the thinking of pets and knowledge of pets such as "Treating pets as equal to humans", we examined the factors facilitating or inhibiting the degree of agreement and acceptance of evacuation behavior with pets. In addition, we explored the factors facilitating or inhibiting disaster preparation for pets. Regarding the results of (1), "Treating pets as equal to humans" means that they like pets and know animal behavior and habits. Regarding the life and death of pets, a Japanese view of pets regards pet lives to be as

respectable as those of humans, and a Western view holds that humans should support and manage pets to promote adaptation to human society. Regarding the results of (2), owners indicated a higher degree of agreement and acceptance of evacuation behavior with pets than non-owners. As a result of the agreement of evacuation behavior with pets, owners and non-owners were influenced by high degree of liking pets and knowledge that the Ministry of the Environment had recommended evacuation with pets. They also had a Japanese view of pets that humans should not control the life and death of pets. In addition, their perception of pets as "Treating pets as equal to humans" was influenced. On the other hand, the degree of acceptance was influenced by high degree of liking pets, having a Japanese view of pets regarding their life and death, and considering pets as "Treating pets as equal to humans." In particular, liking pets affected the level of acceptance among non-owners. The effect of "Treating pets as equal to humans" strongly affected the owners. Moreover, the results showed that "Treating pets as equal to humans" is an important factor in facilitating preparations for pets and evacuation behavior with pets during disasters.

From the results of this study, it is important for owners to be informed by the Ministry of the Environment about the evacuation plans with pets, as well as have "thinking of pets" as factors that increase the degree of agreement and acceptance of evacuation behavior with pets. Specifically, the owners should have a Japanese view of pets' lives and humans should not yield absolute power over pets. It is also important to have a Western view of pets, including human responsibility to train them so that they can adapt to the human society. And, it is important to have "Treating pets as equal to humans". Most importantly, "Treating pets as equal to humans" was extremely important and a mediating factor. Similar results emerged from the non-owners. However, it was important to reduce concerns that pets would bother others and increase pet likeability. One of the factors facilitating "preparations for pets" by owners was the number of pet friends. Moreover, the "degree of animal welfare practice" facilitated "preparedness in everyday life", and the degree of "difficulty being separated from pets" facilitated "preparing for disasters." In addition, "Treating pets as equal to humans" showed a significant association only in a disaster situations.

A practical contribution of this study is that the thinking of pets may be useful for disseminating and enlightening evacuation recommendations. The inherent Japanese views about pet management and evacuation behavior can be used during a disaster.

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