

Which Roles are Citizens and the Community to Play in the Field of Disaster Management? (Results from the Random Sampled Social Surveys to the Disaster Victims of the 1995 Kobe Earthquake and the 2004 Niigata Earthquake Disaster)

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Abstract

The promotion of mitigation or preparedness for impending disasters is a fundamental issue to reduce disaster risks. The experiences from the 1995 Kobe Earthquake clearly demonstrated that communities, non-government organizations, and citizens must share some of the burden of natural disasters because government assistance alone is insufficient to overcome devastating situations. Hence, the question is, “How to divide the responsibilities among individuals, communities, and governments for mitigation or preparedness?” We conducted random social surveys in the impacted area of the 1995 Kobe Earthquake and the 2004 Mid-Niigata Earthquake. We inquired about the attitudes of the victims and their opinions of ‘who has to do what’ when it comes to disaster mitigation and preparedness. The Kobe survey was conducted in Jan. 2005 and had 1,028 valid responses, whereas the Niigata survey was in Oct. 2006 and had 1,013 valid responses. We listed 14 typical countermeasures, and asked the participants who was responsible for each countermeasure.

The main results are as follows: 1) Countermeasures can be divided into four groups based on ‘who is responsible for what: individuals, government, communities & governments, and individuals, communities & government, 2) There is not a significant difference between the Kobe survey and Niigata survey, indicating that victims, who experienced urban disasters or rural disasters, have similar views about the roles they should play for mitigation and preparedness.

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Disaster management plans constructed by the local government are basic descriptions of countermeasures. Who is responsible for each countermeasure must be clearly described in order to effectively promote mitigation or preparedness at any level.

***Keyword:** disaster mitigation and preparedness, individual, community, government*

1. Introduction

In our modern society where various social functions are interrelated in a complex manner, a disaster significantly affects people and society for a long time because things like a secondary disaster make the disaster's scale and scope varied, but immense. In addition, the geographic area affected by disasters is typically large, and the duration of suffering is long. Moreover, even areas not directly struck by disasters are also affected.

In order to cope with such a disaster, it is necessary that three bodies: individuals, communities, and governments, have predetermined roles before and after a disaster. Individuals provide self-help to themselves, their families, and neighbors, while communities provide mutual assistance to local residents and organizations. National and municipal governments and disaster response providers, such as utility companies and public services, provide governmental assistance. When a massive disaster strikes, governmental assistance alone cannot provide a sufficient recovery. Thus, it is imperative that all three forms of recovery: self-help, mutual assistance, and governmental assistance, share the responsibilities, according to what each excels at.

Based on this motivation, we conducted a questionnaire survey asking disaster victims, "What the desired responsibility sharing is among the three bodies from a disaster victim's point of view?" The results should provide knowledge and lessons on disaster prevention and recovery.

2. Method of survey

2.1 Overview of questionnaire survey

The data used in this paper were collected from random sample surveys conducted in two disaster afflicted areas. One set of data, which was collected in January 2005, comes from an urban disaster that occurred in January 1995, the Hanshin-Awaji (Kobe) Great Earthquake. The other set of data, which was collected in October 2006, comes from a rural disaster that occurred in October 2004, the Mid-Niigata Earthquake. (Although not used in this paper, additional multiple random sample surveys have been conducted in these areas.) Both

random sample surveys were conducted in order to reveal the extent of damage and the recovery process of the victims.

Table 1 shows the survey results. Using a stratified two-stage sampling method, each survey randomly sampled the afflicted area, and then the final survey targets were sampled with the probability proportional to size so that one person from one household was sampled based on the Basic Resident Register of each municipality. The response rate was as high as 31.2% in the January 2005 survey, which was ten years after the Hanshin-Awaji (Kobe) Earthquake. We feel that the response rate indicates that there is still high interest among the victims in the Hanshin-Awaji (Kobe) Earthquake and that our questionnaire was easy to respond to. Therefore, we believe the reliability of the survey results is high.

Table 1 Survey Overview

	Hanshin-Awaji (Kobe) Earthquake, 1995	Mid-Niigata Earthquake, 2004
Survey date	January 2005	October 2006
Survey target areas	Areas with intensity 7, areas with no gas supply and Kita-ward and Nishi-ward of Kobe City	Areas with intensity 6 lower or more in Nagaoka City, Ojiya City and Kawaguchi Cho
Survey targets	Men and women of 20 years or older	Men and women of 20 years or older
Method of sampling	Sampled from Resident Register using stratified two-stage sampling	Sampled from Resident Register using stratified two-stage sampling (50 areas each from Nagaoka and Ojiya and 7 areas in Kawaguchi. 20 people from each area)
Number of targets	3300	2140
Number of effective responses	1028	1013
Response rate	31.2%	47.3%
Survey method	Survey mailed out and mailed in, written by respondent	Survey mailed out and mailed in, written by respondent

For the survey frame and analysis of survey items other than role sharing among individuals, municipalities, and governments, please refer to Kimura et al., 2006 [1], Hayashi(eds.) 2006[2], etc. for the 2005 survey on the Hanshin-Awaji (Kobe) Great Earthquake, and Kimura et al., 2005 [3], etc. for the 2006 survey on the Mid-Niigata Earthquake.

2.2 Survey items, “Role Sharing among Individuals, Communities, and Governments”

We asked questions in order to inquire about the victims’ desires in role sharing among individuals, communities, and governments for each aspect of disaster prevention and recovery efforts. Our question was as follows: “It has been said that there are three approaches in disaster prevention and recovery for an earthquake: self-help (help among individuals and families), mutual assistance (assistance within neighborhood community associations and other community groups), and governmental assistance (services provided by the government and other public bodies). For each of the following activities, what is the

desired ratio of role sharing among individuals, communities, and government? According to the examples, please provide what you think is the desirable percentage for each body is so that the total is 100%.” We then asked ten questions about activities such as fall prevention of furniture, etc., providing emergency drills, and assessing and listing vulnerable populations in a disaster such as seniors. In addition to these ten questions, we asked the Hanshin-Awaji (Kobe) Earthquake survivors two questions about tsunamis, and the Mid-Niigata Earthquake survivors two questions about flood damage. Again, we requested the respondents distribution of the three bodies’ (individuals, communities, and government) responsibility to total 100%.

3. Survey results

The results shown in Figs. 1 and 2 revealed that there are four types of balance among the roles to be played by individuals, communities, and governments in disaster prevention and recovery for both Hanshin-Awaji (Kobe) Earthquake and Mid-Niigata Earthquake. The first type is activities that should be done mainly on the individual level, which include “Fall prevention of furniture, etc.” and “Making residential houses earthquake-resistant.” The next type is activities that should be undertaken mainly by the governments. This includes “Securing and maintaining evacuation areas for large areas” and “Operation of emergency shelters.” Although the respondents replied that these activities should be done either by the community or government, they felt that one body must be more than 50% responsible and the most effective way to conduct disaster management is to have the body, which accounts for more than half the desired role sharing, takes the initiative.

The third type is a group of activities where “Communities and governments should cooperate.” This group includes “Providing emergency drills,” “Assisting vulnerable people in times of disaster such as seniors,” and “Inspecting dangerous areas within the community.” The combined percentage of responsibility that victims expect for the communities and the governments for this group exceeds 80%, but the victims felt that each body had distinct, but equal responsibilities. This means that citizens do not rely on either the community or government, but felt that these bodies should work together to effectively provide disaster management so that the governments provide a system and financial resources, while the communities actively provides front line actions.

The final type is activities where “All three bodies: individuals, communities, and governments, should cooperate.” This category includes “Disaster management education for children,” “Securing means to confirm friends’ and relatives’ safety,” and “Preparing emergency food and water supplies.” Victims assess that each of the three bodies (individuals,

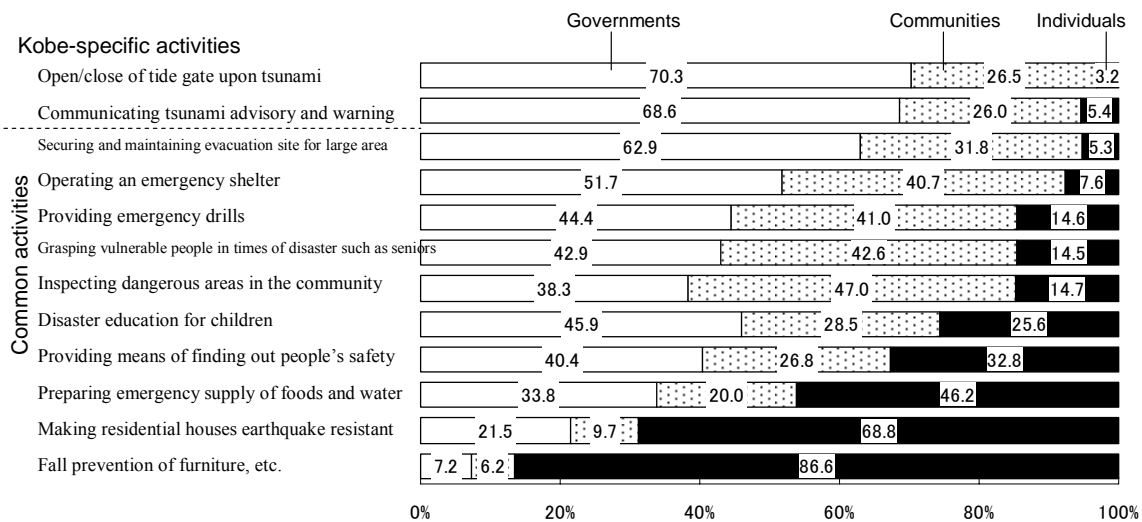


Figure 1 Desired role sharing among individuals, communities and governments by victims of Hanshin-Awaji (Kobe) Earthquake of 1995 (Surveyed in 2005) (Third item from the top and below are common items with Niigata)

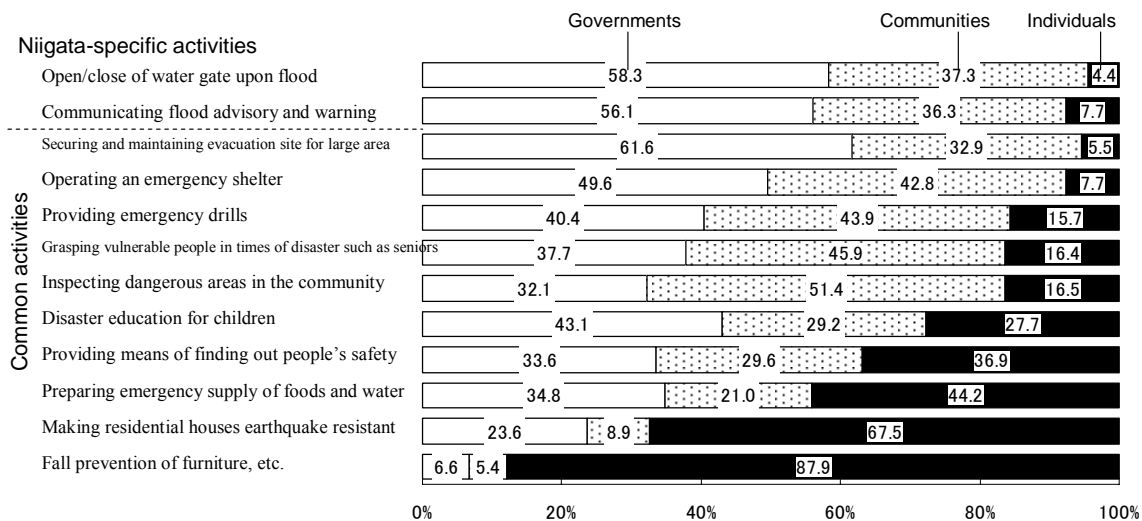


Figure 2 Desired role sharing among individuals, communities and governments by victims of Mid-Niigata Earthquake of 2004 (Surveyed in 2006) (Third item from the top and below are common items with Kobe)

communities, and governments) bear at least 20% of the responsibility. Thus, the message is that a disaster plan is most effective if all three bodies cooperate by each of them playing its own defined role. For instance, checking friends' and relatives' safety cannot be done unless the national or municipal government provides a system to verify the safety, while communities prepare, maintain, and update a safety checklist such as a list of vulnerable people in times of a disaster, and individuals are responsible to verify the safety using the method and checklist provided by the government and community, respectively. From these survey results, we have gained knowledge and lessons from disaster victims that each one of three bodies has a different level of role to play in different types of disaster management. Moreover, disaster victims indicated that individuals, communities, and governments all have

distinct contributions, and that these three bodies must work together to provide countermeasures against disasters.

3.2 Verification of generality

We have conducted a verification of generality. That is, “What kind of difference is there between the two survey results on different disasters with different local characteristics, and extents of damage such as Hanshin-Awaji (Kobe) Earthquake and Mid-Niigata Earthquake?” More specifically, we have conducted a Chi square test for goodness of fit on the two disasters in terms of the percentage of roles each body: individuals, communities, and government, should play in each activity. The results show that there is not a statistically significant difference between the two disasters for any of the activities. In other words, victims from different disasters had similar expectations for the responsibility of each body (Total of 10 activities: $\chi^2(2)=0.02-0.87$, n.s.).

4. Future plans

We have seen the generality in the way people desire role sharing to be among the three bodies in order to effectively promote disaster management in Japan. Based on this role sharing, we would like to foster a discussion on what the specific roles each body should play for each activity area. We would also like to conduct similar surveys on other disasters in Japan and abroad in order to be able to propose desirable organizational structures and role sharing for disaster management.

References

- [1] Kimura, R., Hayashi, H., Tatsuki S., Tamura, K., Noda, T., Yamori, K., Kuromiya, A. and Urata, Y., “Developing Victims’ Life Reconstruction Indicators by Social Survey -Ten Years Monitoring in the Great Hanshin-Awaji(Kobe) Earthquake Disaster-“, Journal of Social Safety Science, No, 8, (2006), pp.415-424.(Japanese)
- [2] Hayashi, H. (ed), “Socio-economic Recovery from the 1995 Hanshin Awaji Earthquake Disaster-Report of Panel Survey 2005-“, Technical Report DRS-2005-02, Research Center for Disaster Reduction System, Disaster Prevention Research Institute, Kyoto University., (2006) (Japanese)
- [3] Kimura, R., Hayashi, H., Tatsuki S., Tamura, K., Horie, K. and Kuromiya, A., “Defined Evacuation and Sheltering Processes of Disaster Victims in 2004 Mid-Niigata Prefecture Earthquake”, Journal of Social Safety Science, No, 7, (2005), pp.161-170. (Japanese)