A Survey of Residents’ Attitudes regarding Mutual Assistance Frameworks in Local Communities after the Severe Inland Earthquake in the Tokyo Metropolitan Area

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ABSTRACT

Mutual assistance among local residents is essential after a major earthquake; however, the level of preparedness among many residents is generally low. Using attitude survey, this paper examines Tokyo residents’ attitudes regarding self-help and mutual assistance. The results show that residents’ self-help techniques are currently not very effective; even after the Great East Japan Earthquake, residents focused on self-help measures and not on mutual assistance. Moreover, many residents had neither disaster supplies nor any interest in disaster training. Further edification of residents and the promotion of mutual assistance among local community members are urgent concerns when advancing disaster preparedness.

Introduction

The potential for future severe earthquakes, like the M7 class Severe Inland Earthquake in the Tokyo metropolitan area or the maximum 9.0 class Nankai Trough Earthquake, commands Japan’s attention. In the next 30 years, both the Tokyo Metropolitan Area and Nankai Trough have a 70% likelihood to experience a major earthquake, an especially high rate. However, the damage of the Great East Japan Earthquake of 2011 has not lead to sufficient countermeasures against large earthquakes. An anticipated major earthquake would cause shaking at an intensity of upper 6 of 7 on the Japanese scale in the Tokyo metropolitan area. Such an earthquake, according to predictions, would cause 304,300 buildings and houses to collapse and be destroyed by fire, causing about 9,700 deaths in Tokyo. In Tokyo, fires are greater concerns than even tsunamis; during a large earthquake, fires are anticipated to break out in various places simultaneously.

If the Tokyo Metropolitan Earthquake occurs, infrastructure (i.e. gas, electricity, telephone, and water supplies) will stop immediately. Public help—like that from fire departments, police, or local governments—cannot rescue all of the people who need help at many places simultaneously. During an emergency situation, important public services such as life-saving does not work effectively, but support for vulnerable people, early fire extinction, management of evacuation centers, and transportation of rescue supplies will be managed by residents only. In a major earthquake, mutual assistance from local community residents is

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essential for the speedy rescue of victims, rapid reconnaissance of the damage, and stabilizing
the role of professional emergency services in the community. Neighborhoods must quickly
draw upon countermeasures for both self-help and mutual assistance. Otherwise, the present
weakness of existing local communities in Tokyo and the surrounding area will leave existing
mutual assistance frameworks for urban residents vulnerable. Previously, local governments
have prepared for many disaster measures by focusing facilities or public rules. However, mutual
assistance is influenced by people’s motivation or opinions. At last, local government is
exploring this agenda as well.

This paper describes citizens’ attitudes through surveys as a means of considering
residents’ mutual assistance frameworks among urban residents around Tokyo, among the
highest seismic risk areas in Japan.

Outline of Citizen’s Attitude Surveys

This survey was planned to illustrate citizens’ opinions on establishing mutual assistance
frameworks after the severe earthquake before the Great East Japan Earthquake in 2011;
however, the effects of this earthquake delayed the survey. Online surveys were targeted at
Tokyo residents. An outline of the surveys is shown in Table 1. Additionally, in a preliminary
survey testing the questionnaire, 10,300 people answered four questions about mutual assistance.

Table 1. Outline of two surveys.

<table>
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<td>Date</td>
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<td>Samples</td>
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<td>Age</td>
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Figure 1 presents the stockpiles of drinking water owned by respondents before the Great
East Japan Earthquake 2011 among those surveyed in both Tokyo and Kanagawa prefecture. In
Japan, the government recommends each household stock minimum 3 liters of water per person.
The questionnaire provided respondents with this recommended amount and asked them their
current stock quantity. However, only 20% of respondents had enough water for equal or more
than three days. Stockpiles of food show the same tendency, although respondents stock slightly
more food than water. This figure also shows age differences. The younger generation has a
smaller stockpile of water: more than 40% of people under 44 years old have no water stockpile.
Elderly people, on the other hand, have more water.

Local governments recommend every household to have enough stockpiles of water and
food for a minimum of three days; based on this recommendation, the government establishes
measures for stockpiles at emergency evacuation centers. However, it is clear that most residents’
stockpiles are not enough to fit with the government’s recommendation. Importantly, 68% of
elderly respondents more than 65 years old do not have a sufficient water stockpile for three days.
In an earthquake situation, elderly people would have a lot of trouble finding or bringing water
during the disruption of essential services. Wider education to residents on the adequate size of
stockpiles and ways to accumulate them is additionally necessary.
Figure 1. Water stockpiles, by age, just before the Great East Japan earthquake.

Interest and Demand of Residents about Mutual Assistance

Needs of residents for mutual assistance from their neighborhood just after the Great East Earthquake are shown in Figure 2. After the severe earthquake in 2011, few respondents felt the importance of their neighborhood regarding help in their daily life. This is because injuries and damage to buildings were relatively small in Tokyo, and infrastructure did not shut down, so that people living there lived their usual lives just after the earthquake.

![Figure 2 Needs of residents for mutual assistance just after the earthquake.](image)

However, a relatively high number of respondents felt that they wanted to give their neighbors help in their daily lives after a severe earthquake (Figure 3). The question asks whether a respondent want to confer with neighbors while they put their lives back together. On this question, there were relatively more ambivalent answers, but many respondents felt positively. Therefore, the importance and demand for mutual assistance was confirmed. Otherwise, the ratio of eagerness of commitment was not so high. Many respondents demand mutual assistance and recognize the remediating effect of self-help. However, there are few respondents who want to involve themselves in mutual assistance. We asked another question
regarding whether respondents believed a severe earthquake would occur within the next 10 years in the Kanto area. A small number of respondents think the earthquake will not occur in the next ten years. Most respondents’ sense of crisis continues.

![Figure 3. Interest of residents on mutual assistance.](image)

Figure 3. Interest of residents on mutual assistance.

Figure 4 describes the relationship between self-help and mutual assistance. There are various activities involved in mutual assistance. This figure shows the result of the question “Do you want to confer with neighbors while you put life back together after a severe earthquake?”. It is unclear whether people with higher stockpiles for self-help have higher consciousness of mutual assistance. Therefore, people who are eager to provide mutual assistance may not always have enough of their own stockpile. There is not a clear enough relationship to determine whether levels of self-help are sufficient, and generally people turn to mutual assistance as the next level activity.

![Figure 4. Relationship between water stockpile as self-help and interest in mutual assistance.](image)

Figure 4. Relationship between water stockpile as self-help and interest in mutual assistance.

Conclusions

If people cannot defend themselves, mutual assistance will not be enough. Current rates of stockpiling water and food are insufficient even now. However, the measures must be carried out immediately to establish enough self-help and effective mutual assistance utilizing neighborhood networks. This paper described that relying only on the edification of self-help or mutual assistance by themselves are not enough regarding implementation of mutual assistance in urban areas like Tokyo. Importantly, people who have no interest for disaster preparedness are almost absent from participating in disaster drills in their area or education from their local community. Therefore, policy measures must shift toward finding leaders and cultivating human resources in the area, and rational implementation measures to support those leaders are increasingly important today. Therefore, our future research focuses on leaders.