

# A Study on Evacuation Support to Elderly People at the Time of the Flood Damage

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**Abstract:** In recent years, Japan suffers flood damage frequently and many elderly people need refuge support at the time of flood damage. In 2004, many typhoons landed at Japan, and many people suffered damage. The dead and the missing person by flood damage amounted to 259 persons in the whole country, and the half was 65 or older-year elderly people.

The government published the “Guidelines for Evacuation Support of People Requiring Assistance during a Disaster” as a countermeasure against damage of the elderly people etc. A basic idea of the guideline is to improve the disaster prevention ability in the region by mutual aid in local society. And, the guideline has demanded to prepare an individual evacuation support plan for those who need assistance.

However, it is difficult to support many elderly people separately one by one. It is because there are too many elderly people who need assistance and because supporters in a neighboring community are insufficient. Many elderly people who are not recognized as people that require assistance during a disaster exist in a present local society. Moreover, the function of the community based on the neighborhood relation that should become basic of the mutual aid has deteriorated.

Therefore, we should construct the environment to be able to demonstrate elderly people's self-help ability enough, in order to lessen elderly people's damage. That is, various persons who constitute not only the neighborhood but a local community should watch elderly people, and it is necessary to maintain the environment of the shelter suitable for elderly people.

**Keywords:** Aging society, Flood damage, Self-help, Mutual aid

## 1. Introduction

The occurrence of natural disasters such as flood damage has been frequent in recent years, and during these disasters, there are many cases where people requiring assistance during a disaster (hereinafter referred to as “person/people requiring assistance”), such as the elderly, become injured or killed. In response to this, the Cabinet Office published the “Guidelines for Evacuation Support of People Requiring Assistance during a Disaster” (hereinafter referred to as “the Guidelines”) in 2005. Efforts regarding specific support measures for people requiring assistance are required of each local municipality, which is the main driving force behind local disaster management planning.

On the other hand, all local societies are going through major changes in response to the progression of the aging society. There are many issues that local societies face, such as the change in age composition within society and the deterioration of the local community.

This paper speculates on the evacuation of elderly people during floods, and will state the necessity of support for many elderly people. There are many elderly people with issues regarding evacuation judgment and danger awareness in local communities. Thus, the countermeasures for such elderly people are necessary. The Guidelines urge devising individual support plans for each person who needs assistance, such as elderly people. However, it is difficult to support individually each of the many elderly people. Therefore, we should construct the environment to be able to demonstrate elderly people's self-help ability enough, in order to lessen elderly people's damage.

## 2. Research background

### 2.1 Characteristics of recent flood damage

Countermeasures for natural disasters tend to focus on earthquakes. However, according to the White Paper on Disaster Management 2007 published by the Cabinet Office, many of the casualties have been caused by storm and flooding, with the exception of the Great Hanshin-Awaji Earthquake in 1995. (Figure 1)

The increase in casualties of elderly people has been prominent especially in floods of recent years, and there is a great need for efforts to devise evacuation support measures for elderly people. In 2004, 10 typhoons hit Japan, causing 259 deaths and numerous missing persons nationwide. Of them, half were elderly people of 65 and older. In the Hyogo prefecture, Typhoon 23 in October 2004 brought extensive damage to various parts of the prefecture, including Toyooka City. Deaths within the prefecture caused by Typhoon 23 amounted to 26, and of them, 13 were elderly people of 65 and older.

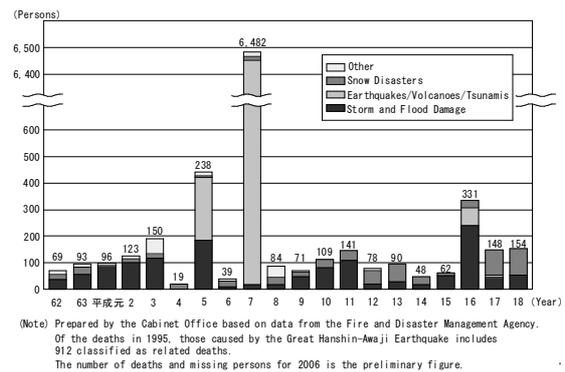
Conventionally, flood countermeasures had been centered on civil engineering works, such as river development projects, and in actuality, have proven very effective. However, efforts on river development works are a part of a long-term plan, and it will take years before development works are completed on all rivers. Also, because the number of river floods have decreased, disaster experience in areas with frequent floods are not being passed down to the younger generation, and the dangers of residents not having correct awareness regarding flooding have been pointed out. With these circumstances in mind, it has been indicated that to counter frequent flooding, disaster mitigation measures focusing on devising measures for evacuation etc., in addition to physical disaster management measures such as river development works, is necessary. There are differences in evacuation behavior for earthquakes and floods. In earthquakes, evacuation begins after the disaster occurs, but in flooding, occurrence of a disaster can be predicted so that evacuation can begin early. Earthquakes cannot be predicted, but floods can be, using objective information such as the amount of rainfall. It can be said that preparation is especially effective for floods compared to other natural disasters, and local disaster management efforts can truly bear fruit. Deliberation on countermeasures prior to flood occurrence is worthwhile.

## 2.2 Guidelines for Evacuation Support of People Requiring Assistance during a Disaster

In response to the fact that there are many cases of people requiring assistance such as the elderly as disaster victims during major disasters, the government has deliberated various countermeasures. In 2005, the Cabinet Office published “Guidelines for Evacuation Support of People Requiring Assistance during a Disaster” (revised in 2006). The Guidelines list five topics: (1) Improving the information communications system, (2) Sharing of information concerning people requiring assistance during a disaster, (3) Creating a tangible evacuation support system for people requiring assistance during a disaster, (4) Assistance at evacuation centers, and (5) Coordination among related organizations, and provides strategies for each.

The basic principle of support measures for people requiring assistance covered by the Guidelines is “mutual help,” where neighbors within the local community help each other. The Great Hanshin-Awaji Earthquake in 1995 revealed that there is a limit to the role that the administration can play immediately after the occurrence of such a major disaster. It is of course understood that the administration is to prepare for disasters as thoroughly as possible. However, material and human resources are limited, and when a major disaster occurs, it will be impossible for the support system of the administration to reach all those in need immediately after occurrence. This should be understood by local society, and it is desirable for them to create within society a mutual-help system in preparation for disasters.

Specifically, efforts to share information concerning people requiring assistance based on the coordination of the departments and agencies of both welfare and disaster management is needed. Then, an overall support plan for people requiring assistance and an individual support plan for each person requiring assistance should be devised in order to improve the disaster management abilities of the region. This is the essential feature of the Guidelines.



(Source: White Paper on Disaster Management 2007)

Fig. 1 Transition of the Number of Deaths and Missing Persons by Type of Disaster

### 3 Current state and issues of evacuation support measures for elderly people during flooding

#### 3.1 Status of Support Measures for People Requiring Assistance in Local Municipalities

To understand the current status of support measures for people requiring assistance in local municipalities, we conducted a questionnaire survey<sup>Note 1)</sup>. The questionnaire included questions regarding status of collection and sharing of information concerning people requiring assistance, and coordination among departments and agencies of both welfare and disaster management, and received answers from 30 out of 41 municipalities in the Hyogo Prefecture.

According to this survey, 17 municipalities answered, “Is conducting” regarding collection of information concerning people requiring assistance. However, 13 municipalities answered, “Is not conducting,” and therefore, the status of information collection cannot be said to be advanced. (Table 1) Municipalities that have appointed a person in charge of support for people requiring assistance within the welfare department amounted to 20. (Table 2) Regarding the situation of a system to rescue people requiring assistance, 23 municipalities answered, “In planning/deliberation” (Table 3), indicating that many municipalities are in the deliberation stage. As for the situation of establishment of welfare evacuation shelters<sup>Note 2)</sup>, only 8 municipalities answered, “Established,” and only 3 municipalities answered, “Will handle through unique support system of the municipality”; 17 municipalities answered, “In planning/deliberation.” (Table 4)

In recent newspaper articles on disaster measures for people requiring assistance, many focus on how the issue of private information protection is causing delays in creating lists of people requiring assistance. However, the important point here is not the creation of lists, but how such information can be used effectively. To this end, information content and scope of sharing must be deliberated thoroughly with specific measures of support for people requiring assistance in mind in order to create lists that meet the needs of the regions' characteristics. At this point, it is assumed that many municipalities are at the stage of deliberation regarding support measures, including methods of support and the ideal state of information sharing.

#### 3.2 Increase of elderly people who require support

In the future, each local society is expected to have many elderly people that require support during disasters. According to the statistical data of Hyogo Prefecture in 2007, 20.5% of the entire population comprises elderly people of 65 and older; this means that one out of five people is classed as an elderly person. Also, 107,000 was the number of elderly people requiring nursing care in 2000; this number is expected to multiply by about 4.6 and become 495,000 by 2025. (Figure 2) With the advancing of the aging society, the size of households will become smaller, and households consisting of elderly couples or elderly persons living alone will increase. Plus, the working population that should bear the central role in mutual-help will largely decrease.

There is an urgent need to deliberate on measures for issues such as handling the increase in elderly people and the shortage of local supporters and helpers in the region.

Two perspectives are necessary when deliberating evacuation support measures for elderly people during disasters. One is measures

	Number of municipalities
Is conducting	17
Is not conducting	13
Total	30

Table\_1 Situation of collection of information concerning people requiring assistance

	Number of municipalities
Yes	20
No	7
Unknown/unanswered	3
Total	30

Table\_2 Existence of a person in charge of support for people requiring assistance within the welfare department

	Number of municipalities
Implemented	5
In planning/deliberation	23
No plans of implementation	2
Total	30

Table\_3 Situation of the system devised to rescue people requiring assistance upon occurrence of disasters

	Number of municipalities
Preparations complete and will be established	8
Will handle through unique support system of the municipality	3
In planning/deliberation	17
No plan to establish	2
Total	30

Table\_4 Situation of installation of welfare evacuation shelter

for elderly people who need nursing care on a daily basis and are incapable of evacuating on their own, and another is measures for elderly people who need no nursing care but require help during disasters.

Conventionally, evacuation support measures for elderly people concentrated on measures for elderly people who have difficulties evacuating on their own, such as those that are bedridden. Regarding elderly people requiring help during disasters, the Guidelines suggest devising individual support plans for the elderly certified as care-need level 3 and above by Long-Term Care Insurance.

On the other hand, flooding affects elderly people who require no assistance on a daily basis.

According to the analysis of characteristics of casualties of Typhoon 23 in 2004, research conducted by Mr. Ushiyama, in addition to casualties being unable to escape the floodwater, many were accident-type casualties caused by careless actions made by the victims themselves. In other words, it states that “accident-type casualties typically occur when elderly men carelessly approach dangerous water areas during torrential rains, inspect the area, and conduct some sort of task in that area,” and points out that “accident-type casualties are caused by the victims actively and knowingly approaching danger areas; there seems to be issues on an entirely different level from simple information management or distribution.” (Ushiyama 2005)

In local societies, there are many elderly people that require no support on a daily basis, but have anxieties and issues with evacuation decisions and danger awareness during emergency situations such as disasters. For elderly people with diminished physical abilities, delay in evacuation decisions can lead to casualties during relocation from submerged areas as well as others. Also, as revealed by typical cases where people are injured or killed by going to check on their rice paddies while typhoons are approaching, lack of correct recognition of potential dangers directly relate to casualties in elderly people. However, such elderly people are not recognized as people requiring assistance at the present, and therefore, the support system is insufficient.

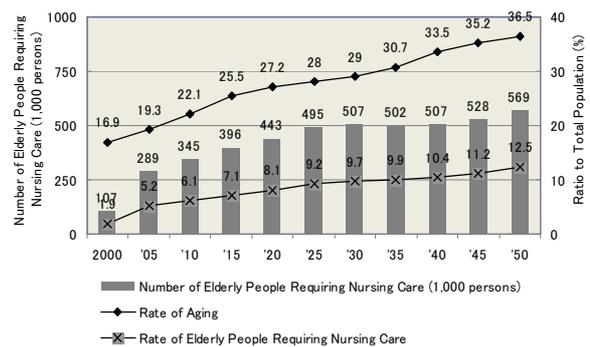
### 3.3 Lack of supporters in the local region

For effective mutual help within the local community during disasters, the maturity of a community based on good neighborhood relations within the local region would be ideal. According to research by Mr. Katada et al on the floods in Koriyama City, Fukushima in 1998, evacuation support for elderly people was actively conducted not only by family members but also by neighbors, and it points out the importance of a bonded local community. (Katada, et al. 2002) However, communities that would serve as foundations of mutual help within the local region face many issues, and it is probably difficult to achieve a sufficient amount of supporters and helpers for the many elderly people just from communities centered on neighborhood relations.

In urban areas, weakened communities caused by estrangement from neighbors are a problem, and it cannot be said that the information concerning elderly people requiring support is being shared by the local residents. Also, in rural areas, the existence of local communities itself is being questioned, with dangers of the increase of marginal villages caused by depopulation and aging, and it is doubtful that sufficient number of supporters and helpers can be secured with just family members and neighbors even if the information was shared.

On the other hand, recent disaster cases revealed that in addition to the neighborhood community, welfare-related personnel play an important role in support of elderly people during disasters.

In Toyooka City, when it was hit by Typhoon 23 in 2004, welfare-related personnel including caseworkers played a major role in supporting elderly people. According to a field survey conducted after the disaster by the Cabinet Office, it was reported that confirmation of safety of elderly people was made by care managers based on information from case workers and the In-Home Care Support Center. Flooding occurs frequently in Toyooka City, and the disaster management awareness of residents is relatively high.



(Source: Reference Material for Health and Welfare for the Elderly 2007 Hyogo prefecture)

Fig. 2 Transition of the number of elderly people who need care

Even in such areas though, evacuation support for elderly people is conducted not only by families and neighbors, but also by the coordination of many, including caseworkers.

It has been reported by Mr. Kitamoto that also during the Niigata-ken-Chuetsu Earthquake in 2004, In-Home Care Support Center employees and municipal employees conducted confirmation of safety and evacuation support for elderly people. It reports that information concerning elderly people is in the hands of care managers, the Long-Term Care Insurance agencies, and coordination between the administration and care managers worked out very well; it points out the importance of coordination of administration and care managers. (Kitayama 2005)

Currently, much of the information regarding people requiring assistance, such as elderly people, residing in society are in the hands of welfare-related personnel including case workers and welfare service agencies. In recent disaster cases, such information is being utilized and much of the confirmation of safety and evacuation support are being conducted by welfare-related personnel including welfare service agencies; this may be supplementing the function of conventional neighborhood communities, making up for the lack of supporters.

### **3.4 Limit of individual evacuation support plan**

Evacuation support measures for elderly people during flooding are insufficient if they only target those who are incapable of evacuating on their own; measures are also needed for the many elderly people who have issues with evacuation decisions and danger awareness. However, conventional local communities based on neighborhood relations cannot provide the sufficient number of supporters that should support elderly people.

Under such circumstance, individual plans to support the many elderly persons are impossible. According to the Reference Material for Health and Welfare for the Elderly 2007 in the Hyogo prefecture, elderly people classified as care-need level 3 and above, which are cited as examples of people requiring assistance in the Guidelines, numbered 65,178, accounting for more than 1% of the entire population of 5,595,132. Individual support plans should be devised for these elderly people who have difficulty in moving on their own. However, elderly people of 65 and older number 1,146,156, which is more than 17 times the number of elderly people certified as care-need level 3 and above. Even if the number is limited to elderly people of 75 and older, the number is 511,076, which is more than 7 times.

There are many elderly people requiring evacuation support during disasters residing in the local society, and the number is expected to continue to increase in the future. It is of course true that not all elderly people require support, but providing an individual support plan for every person of such a large number of elderly people is not feasible.

## **4 Support measures needed by many elderly people**

Then, what perspective should be taken in formulating measures for the many elderly people who have issues with evacuation decisions and danger awareness?

In this Chapter, evacuation behavior characteristics of elderly people during flooding will be considered, based on the questionnaire survey conducted in former Toyooka City, and the ideal state of support measures for the many elderly people for whom individual support is difficult will be deliberated.

### **4.1 Evacuation behavior characteristics of many elderly people**

#### **4.1.1 Questionnaire survey for elderly people**

In former Toyooka City, which received tremendous damage from Typhoon 23, a questionnaire survey targeting elderly people who held membership of the Elderly Club Association, and who received damage of below-the-floor inundation or worse.

During Typhoon 23, former Toyooka City was almost fully equipped with the disaster management information radio, and according to the questionnaire survey, 86.2% of the people knew about the evacuation order. However, in spite of this knowledge, 62.3% of people answered, "Didn't evacuate," indicating that knowledge of evacuation procedures information did not directly connect to their evacuation. (Figure 3) Reasons behind not evacuating were 50.8% for "There was no need to evacuate" and 37.0% for "Wanted to evacuate, but couldn't," revealing that more than one third of elderly people could not evacuate even though they wanted to. (Figure

4) Reasons behind being unable to evacuate were 43.3% for “Couldn’t move because of floodwater” and 24.5% for “Thought it would be more dangerous to evacuate”; this indicates that delay in evacuation was the main cause of not being able to evacuate. (Figure 5) Another reason for not evacuating was, “Didn’t want to evacuate,” which accounted for 9.8%. Detailed reasons for this answer were 67.2% for “Worried about the house,” and 28.1% for “Facilities at shelters don’t meet my physical needs,” revealing that elderly people have anxieties about damage to household goods by above-the-floor inundation and the evacuation shelter environment. (Figure 6)

#### 4.1.2 Residents that do not evacuate

Elderly people are not the only people who do not directly connect evacuation information to their actual evacuation; in general, residents do not evacuate. In former Toyooka City during Typhoon 23, evacuation orders were issued to 15,119 households, totaling 42,794 people. Only 3,753 evacuated to shelters. Even those that evacuated to places other than shelters such as homes of relatives, the percentage was only 32.9%, or approximately one out of three people. However, as a result of such refusal, an alarming number of 939 people were rescued by the Self-Defense Forces, and about 40% of those that did not evacuate were forced to endure confinement on second stories etc. of their inundated, isolated homes for a long period of time.

Delay in evacuation is not a characteristic unique to elderly people. However, delay in evacuation directly connects to casualties in elderly people. Elderly people have diminished physical abilities, and when evacuation is delayed, they become unable to evacuate even if they want to. The price to pay for not evacuating is steep for elderly people. It has been pointed out issues of insufficient danger awareness, delayed decisions, lack of consciousness that they need help, etc. as evacuation behavior characteristics. Therefore, measures to urge early evacuation are needed.

#### 4.1.3 Factors that hinder evacuation

It is generally common during flooding to protect one’s assets, such as moving automobiles to safer locations and moving household goods to second stories of houses, before evacuation. It goes without saying that lives are the most important, but considering the possible damage to household goods by inundation, actions to protect their assets are also important for residents. These actions to protect assets cause delays in evacuation, causing extreme stress.

Protection of assets is especially important to elderly people. If an elderly person living off a pension lost all their household goods, it would definitely be difficult to rebuild his/her life after the disaster. It would be ideal if measures can be taken prior to disasters, but moving household goods is not an easy feat for elderly people. Also, actions such as approaching dangerous areas during torrential rains with insufficient danger awareness is also thought to be the manifestation of a desire to protect assets, and appropriate advice regarding the actions of elderly people during disasters is needed.

Further, burdens of the shelter environment are another factor that hinders elderly people in regard to evacuating. Because it has been pointed out that elderly people are typically too shy or too stubborn to voice complaints regarding shelter life, or they become too anxious to recognize the deterioration of their own health, there is a need to alleviate the anxiety of elderly people concerning the

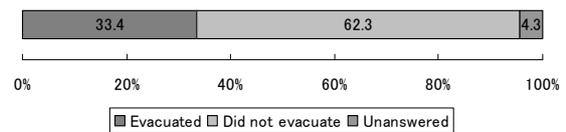


Fig. 3 Did you evacuate? (N=1,011)

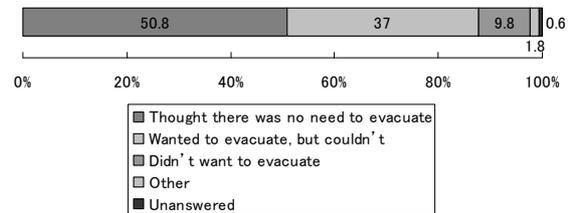


Fig. 4 Reasons behind not evacuating (N=630)

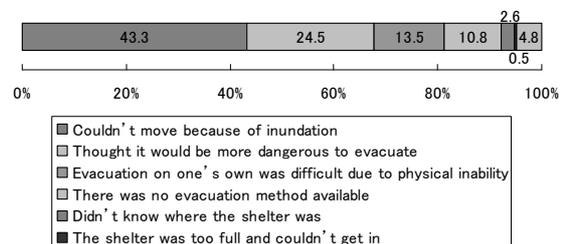


Fig. 5 Reasons behind being unable to evacuate (N=379)

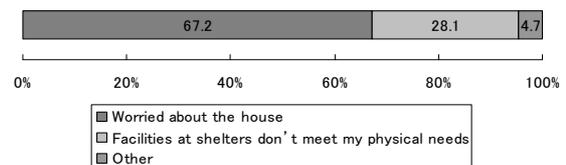


Fig. 6 Reasons behind not wanting to evacuate (N=64)

shelter environment.

It is true that the shelter is a temporary place to avoid disasters, and a comfortable environment cannot be expected. The shelter environment is strenuous even for younger fit residents. However, for elderly people with diminished physical abilities, it can be assumed that the shelter environment is much more burdensome than for others. To prevent elderly people from hesitating to evacuate because of anxiety towards shelter life, there is a need to create a shelter environment that is less strenuous for elderly people.

## **4.2 Directionality of support measures for many elderly people**

### **4.2.1 “Watch-over,” to elderly people during disasters**

Support needed for many elderly people with issues regarding evacuation decisions and danger awareness during disasters is “watch-over,” providing advice regarding danger and encouraging the correct action when following orders to evacuate. Instead of direct support such as securing transportation methods and assisting in evacuation itself, it is necessary to create an environment where elderly people can discover and maximize their self-help abilities by watching over other elderly people during disasters and providing appropriate advice and encouragement when needed.

Currently, various measures such as utilization of evacuation preparation information <sup>Note 3)</sup> and familiarization of degrees of danger of specific regions using hazard maps etc. are being used to connect disaster information to actual evacuation. It goes without saying that such measures are important. However, decisions concerning evacuation are, ultimately, left up to each individual. For elderly people who tend to have a weak evacuation assessment and naive understanding of danger, urging them to evacuate simply by providing information would be difficult. It is important to watch over elderly people during disasters, and provide direct encouragement to begin evacuation procedures.

Such “watching over” will also be required at various other scenes during disasters. In other words, there is a need for a system where elderly people can be watched over extensively, from disaster preparation, evacuation and shelter life to rebuilding their life afterwards, and appropriate support and advice can be provided as needed. Creating an environment, where the self-help abilities of elderly people can be exerted, through such a system of watch-over leads to a decrease in elderly casualties. At the same time, this leads to alleviation of burden of the supporters and helpers, partially making up for the lack of supporters and helpers.

### **4.2.2 Coordination with diverse local entities**

To effectively watch over elderly people during disasters, there is a need to supplement the mutual-help function of local communities based on neighborhood relations.

The importance of coordination with not only locally affiliated organizations such as conventional community associations but also with other entities comprising the community including local businesses, schools, corporations, various committees and NPOs is currently being pointed out. It is also important when creating disaster management measures to seek support systems in coordination with such diverse local entities. Efforts that only function during disasters is not the aim; it would be necessary to create a watch-over system for elderly people that is activated on a daily basis with due consideration for emergency disaster situations.

Those that play an especially important role are welfare-related personnel including welfare service agencies. It has already been mentioned that during the Niigata-ken-Chuetsu Earthquake, welfare agencies played a major role in supporting elderly people, and the importance of coordination between the administration and welfare agencies was reported. The report states the following as reasons why care managers were able to become key persons: (1) care managers have been defined as a position that is under contract to continually support the daily lives of the care receiver, and (2) care managers were able to have the awareness that from the perspective of the process of care management, support provided during disasters would be defined as monitoring. (Katada, et al. 2002) This shows that although the job of a care manager is for a salary, it actually plays a role as a part of the local society. In the case of the Niigata-ken-Chuetsu Earthquake, it is assumed that welfare-related personnel including care managers were supplementing the local communities.

In view of the future advancement of the aging society, local society cannot stand on its own without coordination with welfare-related personnel. There is a need to establish an extensive watch-over system for elderly persons through various locally-oriented

networks based on welfare, and to include in such a system a disaster management perspective in order to create a support system for daily disaster preparations and disaster situations.

#### **4.2.3 Improving the shelter environment**

To allow application of the self-help abilities of elderly people in shelters, an improved shelter environment that is less burdensome to elderly people is necessary. Specifically, conversion to barrier-free facilities must be promoted in order to allow general shelters to be able to accept many elderly people.

Ideally, welfare evacuation shelters should be provided for elderly people with diminished physical abilities. The Guidelines urge preparation of welfare evacuation shelters for people requiring assistance. It is necessary to promote designation of existing welfare facilities and accommodation facilities as welfare evacuation shelters for elderly people who need nursing care, such as those that are bedridden. However, there is a limit to the capacity of welfare evacuation shelters, and it is impossible to accommodate a large number of elderly people. During Typhoon 23, former Toyooka City admitted elderly people requiring nursing care to existing welfare facilities, but issues of low capacity and shortage of staff were never resolved. Extensive coordination is necessary in order to secure a certain number of welfare evacuation shelters, and it is expected to take some time before such a system is established. There is a need for the coordination of accepting elderly people into general shelters, and transporting them as needed to welfare evacuation shelters, making the need more important for general shelters to be able to accommodate the many evacuated elderly people.

## **5 Specific measures**

### **5.1 Coordination with Regional Comprehensive Support Centers**

As a prerequisite to the efforts toward support measures, coordination between departments and agencies of both welfare and disaster management is necessary. Using this coordination as the starting point, a watch-over system for elderly people who are active on a daily basis must be established, with consideration to support elderly people during disaster situations.

The Regional Comprehensive Support Center <sup>Note 4)</sup> is one of the organizations that can play a central role in this system. Regional Comprehensive Support Centers take the role conventionally played by In-Home Care Support Centers, and in addition, from the perspective of preventing elderly people from becoming dependent on nursing care, creates a Regional Comprehensive Support Network through coordination with welfare-related personnel including caseworkers and welfare service agencies as well as various local entities such as local residents and the administration in order to provide comprehensive support to elderly people. This is where information concerning elderly people of the region aggregates.

Specifically, by introducing disaster management into the watch-over system for elderly people conducted centrally by the Regional Comprehensive Support Centers, a system using the coordinated network will be established to watch over elderly people comprehensively, including from the disaster management point of view. Through this system, for example, disaster management efforts can be promoted in the daily lives of elderly people, such as devising asset protection plans or stocking emergency supplies. Also, during disasters, information held by welfare-related personnel can be utilized to confirm safety, plus advice and encouragement toward the evacuation of elderly people can be provided through trust established during daily connection, enabling support that allows encourages the self-help abilities of elderly people. Elderly casualties can be reduced by creating a system where elderly people can be watched over from multiple perspectives through coordinated networks centering on Regional Comprehensive Support Centers.

### **5.2 Utilization of school facilities**

For shelters, it is effective to improve school facilities to allow admittance of many elderly people. Currently, general shelter candidates are mainly public facilities such as schools and community centers, and of these, schools are widely recognized by residents as evacuation centers of the region. Schools have large capacities, and another advantage is that school personnel are always on duty. Shelter management should center on the administration and local residents, but it is also important for shelter management that personnel knowledgeable about the facility can be secured during the confusion immediately following disasters.

Conventionally, the development of school facilities as shelters has been conducted focusing on large spaces such as gymnasiums as evacuation buildings. However, since the need to admit many elderly people can be predicted, there is a need to consider usage of classroom buildings as well. Owing to the declining younger population, there is abundant space in many schools; unused classrooms can be converted into multi-purpose spaces that can admit elderly people during disasters. Also, school facilities are one by one going through constructions to improve earthquake resistance right now, and it would be relatively easy to renovate the facility at the same time the constructions take place.

Especially important is bathroom provisions. In some municipalities, assuming that the public sewer system will be out of use, measures such as choice of location for temporary bathrooms and temporary toilets utilizing manholes are already underway. However, many of the temporary toilets are Japanese-style, which is burdensome to many elderly people. It would be desirable to take the measures one step further, and prepare western-style temporary toilets with handrails that would be more elderly-friendly.

Also, in addition to improvements of facilities, it is desirable for shelters to assume the function of a coordination hub for the watch-over system for elderly people. By creating a multi-perspective network to support elderly people during disasters by using the shelters as hubs of coordination with the Regional Comprehensive Support Center and various other local entities will most likely improve the disaster management ability of the region.

## **6 Conclusion**

This paper discusses evacuation support measures for elderly people during flooding, and states the following two issues:

- (1) Residing in the local society are not only elderly people requiring nursing care, but also many elderly people that require no assistance on a daily basis but need support and help during disasters.
- (2) Local communities based on conventional neighborhood relations are not sufficient to provide enough supporters for mutual help.

Therefore, there is a need to devise support measures for the many elderly people residing in the region who are not considered as requiring assistance, and there is also a need for a system that supplements the lack of supporters and helpers to realize effective mutual help. However, it is virtually impossible to support each elderly person with an individual plan when there are so many. So, the following three are ideal support measures for many elderly people.

- (1) Establishment of a watch-over system that will allow the maximum self-help abilities of elderly people.
- (2) Coordination with various local entities in order to supplement the lack of supporters and helpers within the local society.
- (3) Improving shelter environments to enable admittance of many elderly people.

The Guidelines present various measures regarding the support of people requiring assistance, but these measures are merely listed, without any indication of priority. It goes without saying that efforts to create lists of people requiring assistance, including elderly people, and devise individual support measures are important. However, without securing supporters and helpers within the local society to support mutual help, or without securing evacuation locations for people requiring assistance, individual support plans will not function effectively.

Currently, many local municipalities face shortages in financial and personnel resources, and there is a need for effective utilization of these limited resources upon promoting measures for people requiring assistance. Many municipalities recognize the necessity for measures for people requiring assistance, but efforts toward meeting such a necessity have only just begun. To prepare for the next disaster, immediate efforts with consideration given to the order of priority that corresponds with the characteristics of the region are needed.

## **Notes**

Note 1) The questionnaire survey was conducted in cooperation with Toyo University, targeting disaster management departments and agencies of all municipalities in Hyogo and Niigata prefectures. Questionnaire sheets were mailed in October 2007.

Note 2) Welfare evacuation shelters are shelters with special consideration given to people requiring assistance, and if certain conditions are met, they are eligible for government subsidies under the National Disaster Act. The Guidelines urge utilization of existing facilities such as welfare

centers for the elderly to promote implementation

Reference: Cabinet Office “Guidelines for Evacuation Support of People Requiring Assistance During a Disaster”, March 2006, PP. 15-16

Note 3) Evacuation preparation information refers to the standardized set of information data urging evacuation of those requiring time for evacuation procedures that were conventionally issued separately by each region. Each municipality sets its own judgment standards prior to disasters; issued upon occurrence of storms and floods.

Reference: Cabinet Office “Guidelines for Evacuation Support of People Requiring Assistance During a Disaster”, March 2006, P.4

Note 4) Regional Comprehensive Support Centers are organs established in municipalities to act as a regional hub for comprehensively and continuously coordinating services necessary for elderly people. Established by the revision of the Public Nursing Care Insurance System, their role is to provide comprehensive support to elderly people through coordination of specialists including healthcare nurses, welfare officials and senior care managers.

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