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## ORIGINAL ARTICLE

**An aim of the disaster prevention for safety live of the elderly requiring the long term care**Keiko KITAGAWA<sup>1)</sup>

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**ABSTRACT**

The intensive-care homes for the elderly and health services facilities for the aged that accommodate many elderly people who are vulnerable to disasters and needs care and assistance during the period of emergency evacuation need to be prepared for the damages of disasters.

This study aimed to analyze the effects of the experiences of employees whose facility was suffered from damages from disasters on the preparation for disaster prevention by investigating the consciousness of disaster prevention and mitigation for the employees of nursing care insurance facilities.

The results of this study showed that the employees of facilities who experienced the damages from disasters presented the strong anxiety to them and those experiences were reflected in the preparation for evacuation and disasters prevention. 10% of facilities had the experiences from the damages from disasters. The safety degree of facilities were relatively high, but the majority of facilities did not provide the explanation about the emergency evacuation in disaster situations.

## &lt; Key-words &gt;

Disaster prevention, nursing care insurance facilities, elderly persons requiring long-term care

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## I . Introduction

The consciousness of disaster prevention and mitigation of the employees in charge of disaster prevention of nursing care insurance facilities for the safe life of their residents in disaster situations was investigated in Japan. The degree of safety of the facilities and the consciousness of disaster prevention and mitigation of employees were also explored, because employees of nursing facilities need to be prepared for disaster prevention and mitigation to prevent and minimize the damage of elderly persons requiring long-term care in nursing facilities.

The intensive-care homes for the elderly and health services facilities for the aged that accommodate many elderly people who are vulnerable to disasters and needs care and assistance during the period of emergency evacuation need to be prepared for the damages of disasters. For the preparation for the disaster situations, the conditions of the elderly also need to be identified whether the elderly can evacuate by themselves or not, or they can even perceive disaster situations or not. Therefore, the preparation of the measures for disaster prevention for the facilities to accommodate the elderly is critical to protect the elderly who are disaster-vulnerable and prevent them from getting damaged from disasters.

The preparation for disaster situation differs from the conditions of the elderly, e.g., according to whether the elderly live independently or in nursing care insurance facilities; the persons in charge of protecting the elderly at home are their family, but the persons in charge of them in nursing care insurance facilities are employees. This study researched the supports of the residents of community when the facilities that accommodate the elderly who need care get damaged from disasters in Saga Prefecture.

Nursing facilities are not only the places to provide the elderly with services, but also the home for the elderly requiring nursing care to live. They also play important roles to provide the accommodation for people requiring care in disaster situations and help them return to their life after disasters go by. Therefore, nursing facilities have to be thoroughly prepared for the safe evacuation, because they have to evacuate and to provide the elderly with care at the same time.

This study aimed to analyze the effects of the experiences of employees whose facility was suffered from damages from disasters on the preparation for disaster prevention by investigating the consciousness of disaster prevention and mitigation for the employees of nursing care insurance facilities.

The results of this study showed that the employees of facilities who experienced the damages from disasters presented the strong anxiety to them and those experiences were reflected in the preparation for evacuation and disasters prevention. 10% of facilities had the experiences from the damages from disasters. The safety degree of facilities were relatively high, but the majority of facilities did not provide the explanation about the emergency evacuation in disaster situations.

## II . The Subjects and Methods of Study

### 1. The Effects of the Experiences of Damages from Disaster in the Past on the Consciousness of Disaster Prevention

Nationwide survey was conducted for 7,680 facilities including the long-term care welfare facilities for the elderly and health services facilities for the aged that were affiliated with the Japan Council of Senior Citizen Welfare Service and the Japan Association of Geriatric Health Service Facilities via the questionnaire that was named as the Nationwide Survey on the Disaster Prevention and Mitigation of Intensive-Care Old People's Homes, Health Services Facilities for the Aged and Low-cost Social Welfare Facilities for the Aged. Because the contents of questionnaire were about the damages from disasters and disaster prevention of facilities, the directors or employees in charge of preventing fire and disaster were asked to answer the questionnaire. The contents of questionnaire were as follows: one item about the experiences of damages from disasters (six sub-items in one table), six items about the consciousness of disaster prevention, two items about firefighting and disaster prevention drill, 12 items about the countermeasures against disaster and the coping methods in disaster situations, 12 items about wind and flood damages, 12 items about emergency evacuation and support for evacuees and six items about disaster mitigation. The survey had been conducted from October, 2007 to February, 2008 by being sent and collecting questionnaires by mail; the responded questionnaires were analyzed.

## III. Results of the Survey

The response rate of the survey was 27.9%(See Table 1); among them, the response rate of intensive-care old people's home was 64.4%, which was the biggest one, and that of health services facility for the aged was 33.7%(about 1/3).

<Table 1> The Response Rates by the Types of Facilities

Types of Facilities	(n=2139)	
	Frequency	%
Intensive-care old people's home	1,378	64.4
Health services facility for the aged	720	33.7
Low-cost social welfare facilities for the aged	-	-
<u>Joint establishment</u>		
(intensive-care old people's home + low-cost social welfare facilities for the aged)	32	1.5
No response	9	0.4

### 1. The General Conditions and Structure of Facilities and the Building's Age

The structure of facilities of the responded facilities to the questionnaires are shown in Table 2. For emergency evacuation, the information on the structure of facilities is important, because, when the facility is inundated, escaping to the top of building may decrease the difficulty in evacuation and minimize the damages and it is easier to return back to where people belonged to within a short-term.

<Table 2> The Structure of Facilities

(*n*=2139)

Structure of Building	Frequency	%
Wooden building	9	0.4
Two-storey or higher wooden building	3	0.1
Steel frame	71	3.3
Two-storey or higher steel frame	184	8.6
Ferroconcrete	424	19.8
Two-storey or higher ferroconcrete	1380	64.5
No response	68	3.2

The facilities with the two-storey or higher building account for 64.5% (about two third). New earthquake resistance standards were introduced due to the amendment of Building Standard Law and enforcement ordinance in June, 1981 and the same law and enforcement ordinance were amended again in June, 2000. In the process of the amendment of laws, the structure of ferroconcrete was legalized and many buildings have been mended.

Depending on the types of natural disasters, the geographical environment and location of facilities may significantly affect the scale of damages; for example, when flood occurs, the emergency evacuation can be made to the top of the building in the facility with two-storey or higher building; and the facilities in flatland may have difficulty in secure the safe place within facility depending on the depth and duration of inundation.

According to the survey on the emergency evacuation when flood damage occurs, most of residents answered that they prefer to evacuate to the closer and higher building from where they are rather than do to the place far from where they are; the emergency shelters where they are safe from inundation need to be installed in the places that are located near the residential areas or densely populated areas<sup>10</sup>). Nursing care facilities that are relatively higher buildings can be used as the shelters for people requiring care services while inundation occurs.

## 2. The Experiences of Damages from Disasters

According to the Disaster Management White Paper(2009 Cabinet Office, Government of Japan), due to the changes of climate caused by global warming, natural disasters has occurred more frequently and the frequency of large scale of flood damages have increased because of the growth of precipitation. The countermeasures against disasters have been focused on how to mitigate the damages from natural disasters by improving the ability to deal with disasters as well as how to overcome the vulnerability from natural disasters 11).

Due to the natural environmental conditions such as geographical and geological features and weather conditions, Japan is the natural disaster prone area including typhoon, heavy rain, heavy snow, flood, sediment disaster, earthquake, storm surge, tsunami, volcano eruption, etc. For the past 15 years except the Hokkaido Nansei Oki Earthquake in 1993 and Hanshin Awaji Earthquake disaster in 1995, wind and flood damages including sediment disaster and the damages from heavy snow have occupied the high percentage of the damages and casualties caused by natural disasters. The amount of the damages from natural disasters exceeded 1.0% of GNP in 1965 when the year was in the period of the high-degree economic growth. After that, as the GNP has greatly increased, the amounts of the damages from natural disasters were 0.08% of GNP in 1994 and 0.1% of GNP in 2006. The amount of the damages from natural disasters in 2006 was 641.7 billion Yen and therein lies 10 billion Yen, which is the amount that the welfare facilities got damaged.12). In this survey, 10.2% of facilities answered that they got damaged from natural disasters and among them, wind and flood damages held 70% of damages, which shows the fact that facilities are relatively safe places. However, given the percentage of the facilities that have the experiences of damages from natural disasters was 10.2% and the response rate was only 30% of entire facilities, it is difficult to conclude that the rate of the facilities that have the experiences of damages from natural disasters is low(Table 3).

<Table 3> The Experiences of the Damages from Disasters

	frequency	%
Have experiences	218	10.2
Have no experiences	1565	73.2
No response	356	16.6

50.5% of damages was caused by wind from typhoon, 37.2% by earthquake and 17.9% by flood; i.e., Hokkaido Nansei Oki Earthquake in 1993, Hanshin Awaji Earthquake disaster in 1995, the eruption of Miyakejima volcano at Mt. Usuzn in 2000, Niigata Prefecture Chuetsu Earthquake and heavy rains due to the occurrence of the largest number of typhoons in weather observation history in 2004, heavy snow between 2005

and 2006, Noto Hanto Earthquake, Niigata Prefecture Chuetsu Earthquake and huge typhoons in 2007(See Table 4).

<Table 4> The Types of the Damages from Natural Disasters

(n=218)		
Types of the Damages	Frequency	%
Flood damages from heavy rain	39	17.9
Wind damages from typhoons	110	50.5
Earthquake	81	37.2
Fire	4	1.8
Others	35	16.1

※Note: Multiple answers were allowed.

In this study, the damages of natural disasters according to the administrative districts where the facilities were located in, even though the damages of natural disasters differ from the types and scales, time, regions(locations) of disasters and geographical features. The region with the highest rate of damages to facilities(37.5%) was Kumamoto Prefecture and of which the damages were caused by flood; the ranked second region(37.3%) was Niigata Prefecture by earthquake; and the third one(31.3%) was Saga Prefecture by flood. Beside, wind damages frequently occurred in the western areas of Japan such as Kyushu, Shikoku and Kansai and earthquakes occurred in the eastern area such as Chuetsu, Hanshin and Hokuriku. In recent, the large scale of earthquake occurred in the Kyushu in the northern area of Japan. In total, 218 facilities(10.2%) of 2,139 responded facilities to the survey answered that they have the experienced of the damages by wind and flood damages, earthquake, etc.

### 3. The Degree of the Concerns about Disaster Prevention: the Types of Natural Disasters that the Facilities are concerned about

According to the Survey on the Damages from Flood and Sediment Disasters(2005 Cabinet Office, Government of Japan) 13), among people who experienced the natural disasters, they answered that they mostly felt afraid of typhoon(29.1%), earthquake(23.1%), heavy rain(11.3%) and the overflow of the river(11.2%), which increased from the results in 1999 of typhoon(25.3%), earthquake(18.3%) and heavy rain(9.2%); the percentage of people answered that they did not feel afraid of damages or risks was 47.7%(Multiple response was allowed.).

In this study, natural disasters were divided into six kinds; six score was given to the first ranked natural disaster and one score to the sixth ranked natural disaster.

The ranks of the disasters that the facilities are concerned about are shown in Table 6 and there were significant differences among disasters. The averages of each disaster were as follows; 2.20 of inundation by flood, 1.97 of sediment disaster by flood, 0.89 by

storm surge and tsunami, 2.61 of wind damages, 4.70 of earthquake and 4.60 of fire.

Natural disasters may be recognized differently according to the geographical features and the state of their damages; therefore, the results of this survey may show the tendency of the facilities toward the kinds of natural disasters, even though they cannot show which natural disasters the facilities are concerned about conclusively.

It was surveyed whether the experiences of the damages from disasters affected the preparation for the disaster prevention and mitigation by dividing the facilities into two groups with or without the experiences of the damages from disasters.

As to the inundation by flood, 5.6% of the respondents selected the inundation as the first place that made them concerned about. There was a small difference between the groups with the experiences of the inundation(11.9%) or without them(7.1%) and the total percentages of the respondents selected the inundation as the first to third places was 66%(Multiple response was allowed), which showed the relatively low degree of the concern about the inundation. The regions that respondents answered that they are concerned about the damages of inundation included Tokushima and Aichi Prefectures(See Table 5).

As to the sediment disaster, 4.0% of the respondents selected the sediment disaster as the first place that made them concerned about and the total percentages of the respondents selected the sediment disaster as the first to third places was 33.3%(Multiple response was allowed), which showed that they are relatively optimistic about it. The degree of the concerns about the inundation was not high (See Table 5).

Even though only 3.1% of the respondents selected the storm surge and tsunami as the first place, the percentage greatly differs from the geographical features and regions of the place that the facilities that the respondents belonged to were located in. Most of the facilities didn't show the concern about them much, but only the respondents in Kochi Prefecture showed the above-the-average degree of the concern about them(See Table 5). However, storm surge and tsunami had occurred only twice for the last two decades, but caused great damages; the storm surge by typhoon no.18 in Yatsushiro Sea caused 12 casualties in September, 1999 and typhoon no.16 in the Inland Sea killed two people in August, 2004.

As to the damage from wind, 13.9% of the respondents selected the damage from wind as the first place that made them concerned about. In the total percentages of the respondents selected the damage from wind as the first to third places, the percentage of the group with the experiences of the damages from disasters was 66.2% and that without the experiences was 50.3%(Multiple response was allowed)(See Table 5). The degree of the concerns about wind damages from typhoon was higher than that of the concerns about flood damage and sediment damages(See Table 5). The regions of which the concern about wind damages is high are concentrated in the western Japan including Kumamoto and Kagoshima Prefectures.

As to the earthquake, 44.2% of the respondents selected the earthquake as the first

place that made them concerned about and the total percentages of the respondents selected the earthquake as the first to third places was 91.3%(See Table 5). The degree of the concerns about earthquake was highest among the disasters; it may be because great earthquakes successively caused serious damages and the facilities have accommodated many elderly people requiring care services. The degree of the concern about earthquake of the facilities was likely to be high in the whole country. Among the 11 prefectures where showed the high degree of the concern about earthquake, Ishikawa Prefecture was ranked the first, Kochi Prefecture the second and Miyagi Prefecture the third. The results lead to presume that the damages from earthquake in the past affected the high degree of the concern about earthquake now.

Fire can be divided into the secondary fire that is caused by natural disasters and the primary fire by human error. This study was conducted without dividing two kinds of fire. As to fire, 33.0% of the respondents selected the damage from fire as the first place that made them concerned about. In the total percentages of the respondents selected the damage from wind as the first to third places, the percentage of the group with the experiences of the damages from disasters was 88.0% and that without the experiences was 95.1%(Multiple response was allowed), which were almost similar with the figures of earthquake. However, the percentage(33.0%) of the respondents who selected fire as the first place was lower than that of earthquake(44.2%)(See Table 5). Among the prefectures that showed the high degree of the concern about fire, Yamagata Prefecture was ranked the first, Tottori Prefecture the second and Tochigi Prefecture the third; other 6 prefectures including Akita, Ibaraki and Tokushima Prefectures showed the same degrees.

In summary, among the disasters that the respondents were most concerned about, the damages from earthquake was ranked the first, fire the second, wind the third and flood damages fourth. Even though the degree of risk and the types of damages of natural disasters may differ from the location of facilities and the geographical features of the region, the degree of the concern about earthquake was highest in every prefecture. Even in the region with frequent damages from flood and almost without damages from earthquake, the degree of the concern about earthquake was likely to be high. The result about Saga Prefecture, where earthquake has not occurred, showed similar situation<sup>14</sup>; even though 40% of facilities experienced the damages from flood and damages from flood and wind occurred frequently in Saga Prefecture, the disasters that the facilities worried about most were earthquake and fire. Even though the damage from wind was designated as the disaster of extreme severity and the large scale of inundation occurred by heavy rain in 2008 and 2009 in Saga Prefecture, all the facilities were most concerned about the fire and earthquake.

Considering the experiences of the flood damages, however, the concern about flood damages was not so high. Even after having experienced flood damages, the safety countermeasures against flood damages have not been prepared sufficiently<sup>14</sup>).

Therefore, the placement of the facilities in Saga Prefecture should be made with the caution against the damages from disasters. The degree of the risk of natural disasters differs from the regions and the consciousness of disaster prevention is not enough to conceive those situation.

As to the degree of the concerns about the natural disasters by the kinds of disasters that caused damages in the past, there was the high degree of the correlation between the experiences of the damages from disasters and the degree of the concern about them. According to the results of the research on the evacuation of residents in community10), when residents were not concerned about flood damages, they didn't respond to flood damages at all and vice versa; when residents were concerned about flood damages, they responded to them very well. When the employees of facilities are more concerned about disaster prevention, they may be more prepared for it and make the residents of their facilities better-prepared.

<Table 5> The Disasters that the Facilities Feel Afraid of the Damages from Disasters by Whether to Have the Experiences of the Damages from Disasters

Rank	Flood Damage (Inundation)		Flood Damage (Sediment)		Storm Surge/Tsunami		Wind Damage		Earthquake		Fire	
	(n=159)	(n=1102)	(n=150)	(n=1078)	(n=127)	(n=911)	(n=180)	(n=1199)	(n=208)	(n=1484)	(n=200)	(n=1450)
	Yes Frequency y(%)	No Frequency (%)	Yes Frequency y(%)	No Frequency (%)	Yes Frequency y(%)	No Frequency (%)	Yes Frequency (%)	No Frequency (%)	Yes Frequency y(%)	No Frequency (%)	Yes Frequency y(%)	No Frequency y(%)
1st	19(11.9)	78(7.1)	6(4.0)	61(5.7)	4(3.1)	22(2.4)	25(13.9)	50(4.2)	92(44.2)	633(42.7)	66(33.0)	681(47.0)
2nd	26(16.4)	71(6.4)	17(11.3)	101(9.4)	3(2.4)	32(3.5)	28(15.6)	98(8.2)	66(31.7)	619(41.7)	64(32.0)	538(37.1)
3rd	21(13.2)	291(26.4)	27(18.0)	199(18.5)	4(3.1)	45(4.9)	66(36.7)	454(37.9)	32(15.4)	147(9.9)	46(23.0)	160(11.0)
4th	44(27.7)	324(29.4)	29(19.3)	236(21.9)	7(5.5)	49(5.4)	42(23.3)	370(30.9)	12(5.8)	66(4.4)	23(11.5)	55(3.8)
5th	42(26.4)	303(27.5)	49(32.7)	347(32.2)	21(16.5)	76(8.3)	17(9.4)	202(16.8)	3(1.4)	16(1.1)W	1(0.5)	15(1.0)
6th	7(4.4)	35(3.2)	22(14.7)	134(12.4)	88(69.3)	687(75.4)	2(1.1)	25(2.1)	3(1.4)	3(0.2)	0(0.0)	1(0.1)
$\chi^2$	$\chi^2=32.638$		$\chi^2=2.135$		$\chi^2=10.003$		$\chi^2=45.700$		$\chi^2=18.590$		-	
	n.s		n.s		n.s		n.s		n.s			

Note 1: \*\*  $p < 0.01$ , ns=not significant

Note 2: As to the fire, chi-squared test was not conducted due to its low frequency of incidence.

Note 3: The response rates of each disaster differed from each disaster, because the facilities that did not respond to the questions were excluded.

#### 4. The Consciousness of Disaster Prevention of the Employees of the Facilities

Table 6 shows the influence of the experiences of the damages from disasters on the consciousness of disaster prevention of the employees of the facilities. When the facilities where the elderly requiring care services live get damaged from disasters, the elderly residents are directly and indirectly affected by the damages. The preparation to minimize the damages such as predicting damages and planning emergency evacuation needs to be made and it is affected by the degree of the concerns about natural disasters and the consciousness of disaster prevention. Therefore, the consciousness of disaster prevention and the preparation for responding to the damages of the employees of the facilities should be raised.

According to the nationwide survey, there was not significant relationship between the scale of damages and the consciousness of disaster prevention, but the consciousness of disaster prevention of the employees of the facilities with the experiences of the damages from disasters was a little higher than that of the employees without them; the average degree of the consciousness of disaster prevention was 2.5.

As to the consciousness of disaster prevention of the employees of the facilities, that of 18.3% of the facilities was very high and that of 48.6% of the facilities was high. The facilities with the experiences of the damages from disasters showed the higher degree of the consciousness of disaster prevention than those without them; in the facilities without the experiences of the damages from disasters, the consciousness of disaster prevention of 8.2% of the facilities was very high and that of 44.0% was high. Meanwhile, among the facilities that answered that they had a high degree of the consciousness of disaster prevention, the percentage of those with the experiences of the damages from disaster was 66.9% and the percentage of those without them was 52.2%. Among the facilities that answered that they have very high degree of the consciousness of disaster prevention, the percentage of those with the experiences of the damages from disaster was 32.1% and the percentage of those without them was 46.6%(See Table 6).

<Table 6> The Consciousness of Disaster Prevention of the Employees of the Facilities

Degree	Frequency		
	With experiences of damages from Disasters	Without experiences of damage disasters	the of from No response
Very high	40(18.3%)	129(8.2%)	40(11.2%)
High	106(48.6%)	688(44.0%)	138(38.8%)
Low	65(29.8%)	644(41.2%)	151(42.4%)
Very low	5(2.3%)	85(5.4%)	19(5.3)
No response	2(0.9%)	19(1.2%)	8(2.2%)
Total	613	3953	895
Average	2.81	2.53	2.51

\* The figures within parentheses are percentage

\*\* According to the degrees of the consciousness of disaster prevention, the scores were given; four score for high degree, three for a little high, two for a little low, one for low and zero for no response.

It is reasonable to assume that the employees of the facilities who were in charge of providing care services are not prepared for the damages from natural disasters, for it was found that the consciousness of disaster prevention of the employees of 30 % of the

facilities with the experiences of the damages from disasters and 50 percent of the facilities without them was found to be in the low degree of the consciousness of disaster prevention.

The issues on the safety concerns about the emergency evacuation during the night may be brought up, because the numbers of employees on duty differs from day or night. The facilities with the experiences of the damages from disasters are more cautious about the emergency evacuation regardless of whether it happens during the day or night. It, however, cannot be sure that the placements of employees were affected by whether to have the experiences of the damages from disaster or not; for the emergency evacuation during the night, the placements of the employees need to be made more cautiously. As to the consciousness of disaster prevention of the employees of the facilities, the results of the survey showed that there was not significant influence of the experiences of the damages from disasters on it, because the average of the degree of the consciousness of disaster prevention of the employees of the facilities with the experiences of the damages from disasters was 2.8 and that of those without the experiences was 2.5, regardless of the kinds of disasters(See Table 7).

Table 7 and 8 show the current state of the fire drill and disaster prevention practice by whether to have the experiences of the damages from disasters or not. No significant difference in the times of fire drill and disaster prevention practices was found by whether to have had the experiences of the damages from disasters. About over 10 % of the facilities had conducted the disaster prevention practices and showed the high degree of concerns about the fire; 40 % of the facilities had not conducted the disaster prevention practices and about 5 % conducted the once or twice a year. There was no difference in the times of the implementation of disaster prevention practices by whether to have had the experiences of the damages from disasters.

<Table 7> The Times of Fire Drill by Whether to Have Had the Experiences of the Damages from Disasters

Fire Drill	Frequency		
	With the experiences of the damages from disasters	Without the experiences of the damages from disasters	No response
0	5(2.3)	28(1.8)	10(2.8)
1~2	133(61.0)	1084(69.3)	236(66.3)
3~6	50(22.9)	286(18.3)	72(20.2)
7~11	16(7.3)	63(4.0)	11(3.1)
12 and over	14(6.4)	104(6.6)	27(7.6)
	$\chi^2=$	12.85	n.s

&lt;Table 8&gt; The Times of Disaster Prevention Practices by Whether to Have Had the Experiences of the Damages from Disasters

Disaster Prevention Practice	Frequency		
	With the experiences of the damages from disasters	Without the experiences of the damages from disasters	No response
0	89(40.8)	632(40.4)	133(37.3)
1~2	109(50.0)	758(48.4)	180(50.6)
3~6	14(6.4)	117(7.5)	27(7.6)
7~11	1(0.5)	23(1.5)	5(1.4)
12 and over	5(2.3)	35(2.3)	11(3.1)
	$\chi^2=$	3.69	n.s

In July, 2008, Central Disaster Prevention Council emphasized the reinforcement of the response ability to disasters with overriding priority as the measures for disaster prevention of 2009; in order to raise the response ability to disaster situations, the measures have to be taken to devote to cultivate the men of ability and to establish the system to enable to rescue and support victims promptly, to reinforce the base of the disaster prevention and the ability of quick responses with maintaining equipments and to be ready by simulating the potential damages from natural disasters and drilling to deal with them via the network among the related agencies. To protect the residents of the facilities, to secure their safety and to respond promptly and appropriately, disaster prevention practices should be implemented. Diverse situations need to be considered for the preparation of measures; e.g., the building where people requiring care services live get damaged, the disaster situations dragged out for too long.

In this study, to research the consciousness of disaster prevention of the employees, the preparedness of disaster prevention of the facilities and the preparedness of the measures to secure the safety of the residents in the facilities in disaster situations, it was asked whether the explanation about the measures of disaster prevention have been given to the residents and their families during the admission process; when people requiring care services get admitted to the facility, the explanation about the facilities, the life in the facilities and the unexpected circumstances such as disaster situations must be given to the residents and their families (See Table 9).

<Table 9> Average Scores by Whether to Have Had the Experiences of the Damages from Disasters and the Types of Disasters

(*n*=2139)

Types of Disasters	Groups	Frequency	Average score
Wind damages from typhoon	Entire Facilities	2139	2.61
	Facilities with the experiences of the damages from disasters	174	3.19
	Facilities with the experiences of wind damages	83	4.28
Earthquake	Entire Facilities	2139	4.70
	Facilities with the experiences of the damages from disasters	201	4.71
	Facilities with the experiences of wind damages	63	5.36

Note: The average scores were calculated by converting the ranks to scores; the first rank to six score, the second to five, the third to four, the fifth to two and the sixth to one.

In the 46.6% of the facilities, the explanations about the disaster prevention, emergency evacuation and contact with the families had given regardless of whether to have had the experiences of the damages from disasters or not; there was no significant difference between the facilities with the experiences of the damages from disaster(48.2%) and those without them(45.1%)(See Table 10).

<Table 10> Whether to Explain the Plan of Disaster Prevention to the Residents and their Families during the Admission Process

	Without the		No response ( <i>n</i> =356)
	With the Experiences Of the Damages from Disasters( <i>n</i> =218)	Experiences Of the Damages From Disaster( <i>n</i> =1565)	
	Frequency(%)	Frequency(%)	Frequency(%)
Providing the explanation to the residents and their families	105(48.2)	706(45.1)	154(43.3)
Not providing the explanation to the residents and their families	108(49.5)	829(53.0)	191(53.7)
No response	5(2.3)	30(1.9)	11(3.1)
	$\chi^2=$	3.095	n.s

Note: n.s= not significant

The lessons from the experiences of the damages from disasters should be reflected to the preparation of disaster prevention including the improvement of the consciousness of disaster prevention of the employees of the facilities, the improvement of the consciousness of the residents' families to support the disaster prevention, the frequent implementation of fire drill and disaster prevention practices, the preparation of relief goods for emergency situations and the emergency evacuation plan.

In the preliminary survey that was conducted in Saga Prefecture, even though there were about 40% of the facilities that had experienced the damages from disasters, 8.3% of them didn't still explain disaster prevention and evacuation to the residents and their families. Both the residents and the employees of the facilities didn't show the high degree of the concerns about disaster prevention and evacuation<sup>14</sup>). In this study, it was also shown that 49.5% of the facilities with the experiences of the damages from disasters and 53.0%(about one half) of the facilities without them didn't provide the explanation about disaster prevention during the admission process.

Tanaka<sup>15</sup>) suggested that the living of the elderly in the emergency shelter needs supports and the countermeasures against the damages from disasters considering the diversity of disaster situation need to be reviewed to solve the problems from the evacuation of disaster-vulnerable people and the difficulty of the living during evacuation; in the facilities where the elderly live who cannot live without other's assistance and require care services, there are several things to be considered such as the damages of the facilities, the individualized responses to the evacuation and care needs of the elderly and the necessity of the first aid medicine. In addition, how to communicate and share the information in disaster and emergency situations and who will be in charge of deciding to provide with supports or to accommodate local residents in disaster situations should be determined in advance in the facilities where people requiring care services will be served. It is critical that the parts and responsibilities between the facilities and community in future disaster situations should be clearly determined.

Due to the increased frequent occurrence of natural disasters, the degree of safety of building(s) and the response ability in disaster situations may be the significant factors to choose the facilities. Therefore, the consciousness of disaster prevention of the employees of the facilities should be raised as well as the ability to take care of the elderly requiring care services. The employees of the facilities should secure the safety of residents and the facility by understanding the plan of disaster prevention of local government and community and maintaining the crisis management system of the facility including their own evacuation plan of the facilities.

#### IV. Considerations

Since Hanshin Awaji Earthquake Disaster occurred in 1995, the concerns about the disaster prevention of social welfare facilities had slowly grown. Due to the Chuetsu Oki

Earthquake, nursing facilities began to be used as the emergency shelters and social welfare professionals started taking part in supporting the emergency evacuation procedure. In this social atmosphere, social welfare facilities have become acknowledged as the facilities to secure the safety of the residents, to provide them with supports for emergency evacuation and to assist people in disaster situations.

The storm surge in Shiranuhi town of Kumamoto Prefecture in 1989, which had occurred before the earthquake in 1995 caused the damages to nursing home for the aged; the elderly could not escape, because they missed the evacuation time and also there was the case that the elderly who were living at the first floor were killed, because they couldn't evacuate to the second floor<sup>2)</sup>. The sediment disaster by heavy rain caused 16 casualties in Yamaguchi Prefecture in July, 2009 and, among them, 6 casualties were living at intensive-care old people's home. These cases showed that the disaster prevention of the facilities to accommodate the elderly requiring care services needs to be emphasized.

In this study, the influence of the experiences of the damages from disasters on the preparation for disaster prevention were analyzed. In results, it was found that they have affected the preparation for disaster prevention, even though the percentage of the facilities with the experiences of the damages from disasters was small. That is, the facilities with the experiences of the damages from disasters were more likely to pay higher attention to the safety than those without them. Based on those damaged experiences, if the employees of the facilities were prepared by raising the consciousness of disaster prevention of employees, being ready with simulating the specific conditions on disaster situation in advance and explaining to the residents and their families and preparing the plan about safety and emergency evacuations , the safety of the facilities could be more secured.

In addition, because the number of employees on duty during the night is smaller than during the day, the measures for the disaster situations during the night should be prepared for the shortage of employees to secure the safety of the residents.

The residential facilities for the elderly requiring care services that have social welfare professionals may become the emergency shelter for local residents in disaster situations and need to be prepared for them, but the number of accommodations and the scale of assistance may depend on the preparedness of the facilities for disaster situations.

The employees of the facilities should secure the safe living of people requiring care services(the elderly who are living in the facilities) and simultaneously provide the support for the local residents who would escape from disaster to them. Therefore, the employees of the facilities for people requiring care services should have the high degree of the consciousness of disaster prevention and mitigation and be prepared for disaster situations thoroughly.

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