The Survey on the awareness of residents who have experienced the earthquake for the first time in their lives: -In case of the Ohdaesan earthquake in Korea-

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ABSTRACT :
Ohdaesan earthquake was the most meaningful earthquake in Korea because it was felt all around the country and initiated to enact the Earthquake Disaster Countermeasures Act. The purpose of this study is the understanding on the awareness of first earthquake experienced residents in the affected area. The questionnaire were prepared in the four types, that is the knowledge of earthquake before experience, the instinct awareness of residents during the earthquake, the awareness and action of those after the events, and the resident's opinion on the national countermeasures. The result of this study on the awareness and action of residents would be considered to be used as the basic materials for national earthquake countermeasures policies.

KEYWORDS:
Earthquake, Instinct awareness, National countermeasures, Earthquake material connecting media, Earthquake experienced place, Action for personal safe

1. INTRODUCTION

Ohdaesan earthquake (M4.8) was occurred at 20:56 on January 20th, 2007 in Pyongchang-gun, Kwangwon-do, South Korea. This earthquake was recorded for the first time experienced after Hungsung earthquake in 1978. There were in spite of no-casualties and little damages; however it was the meaningful earthquake in Korea because it was felt all around the country except islands and initiated to enact the Earthquake Disaster Countermeasures Act.

The purpose of this study was the understanding on the awareness of first earthquake experienced residents in the affected area. The questionnaire were prepared in the four types, that was the knowledge of earthquake before experience, the instinct awareness of residents during the earthquake, the awareness and action of those after the events, and the resident's opinion on the national countermeasures.

2. OUTLINE OF RESEARCH

2.1 Targets and Methods

This survey was researched around the epicenter. The targets were residents who have lived in Pyongchang area and have experienced the shock. The purposes were researched on the actual conditions and effects of educational public relations. It was also accomplished not a statistical sample survey but legwork survey which was carried out for 144 persons and during 3days on January 31 to February 2 in 2007. The locations were Deahwa-myun, Doam-myun, Yongpyong-myun, Jinbu-myung, and Pyongchang-myung in Pyongchang-gun, Kwangwon-do.

2.2 Questionnaire

It were organized that the questionnaire had twenty objective questions and one subjective question. It were also organized the basic facts of respondents, knowledge of earthquake before experience, the instinct awareness of residents during the earthquake, the awareness and action of those after the events, and the resident's opinion on the national countermeasures.

3. ANALYSIS OF SURVEY

3.1 Basic facts of Respondents

The ratio of man was 58.3% and woman was 41.7% in the respondents. It was determined that it was very balance of survey results. It shows the 144 persons' age and occupation categories in table 3.1.

Table 3.1 Crossing comparison between age and occupation categories for respondents

Classification	Students	Office workers	Officials	Businessman	Farmer	Others	Total
under 10s	0	0	0	0	0	0	0 (%)
10s	3	0	0	0	0	0	3 (2.1%)
20s	3	16	5	2	0	1	27 (18.8%)
30s	0	11	9	8	1	9	38 (26.4%)
40s	0	2	4	15	3	4	28 (19.4%)
50s	0	1	2	18	8	1	30 (20.8%)
60s	0	1	0	4	1	1	7 (4.9%)
over 70s	0	0	0	2	4	5	11 (7.6%)
Total	6 (4.2%)	31 (21.5%)	20 (13.9%)	49 (34%)	17 (11.8%)	21 (14.6%)	144 (100%)

Where, there were answered between 20s and 50s that ages were lively social activities. So this results were determined that residents had the understanding ability of earthquake prevention information and actively managed the situation in earthquake.

3.2 Research on Earthquake Prevention Knowledge

It were researched to review that the earthquake information which were already known and the way of information acquirement. It was as follows.

3.2.1 Awareness of earthquake occurrence in Korea

There was very danger area about earthquake in Korea by the awareness of residents because many people thought that small scale earthquake might be occurred. However, this survey was researched after earthquake so it should be considered that the fact of shock experienced directly.

Table 3.2 Awareness of earthquake occurrence time

Classification	Total answer distribution	Answer distribution of small scale earthquake occurrence	Answer distribution of large scale earthquake occurrence
under 1 year	8 (5.6%)	5 (6.6%)	1 (3.0 %)
after 1~3 year	9 (6.3%)	2 (2.6%)	6 (18.2%)
after 3~5 year	10 (6.9%)	7 (9.2%)	3 (9.1%)
after 5~10 year	24 (16.7%)	10 (13.2%)	11 (33.3%)
after 10~30 year	19 (13.2%)	11 (14.5%)	6 (18.2%)
after 30~50 year	4 (2.8%)	0 (0%)	3 (9.1%)
after 50~100 year	3 (2.1%)	1 (1.3%)	0 (0%)
over 100 year	2 (1.4%)	1 (1.3%)	0 (0%)
don't-know	65 (45.1%)	39 (51.3%)	3 (9.1%)
Total	144 (100%)	76 (100%)	33 (100%)

3.2.2 Usefulness and acquirable possibility of earthquake knowledge

Overall, there were many people didn't have gotten the earthquake data so it was desired communication of them actively.

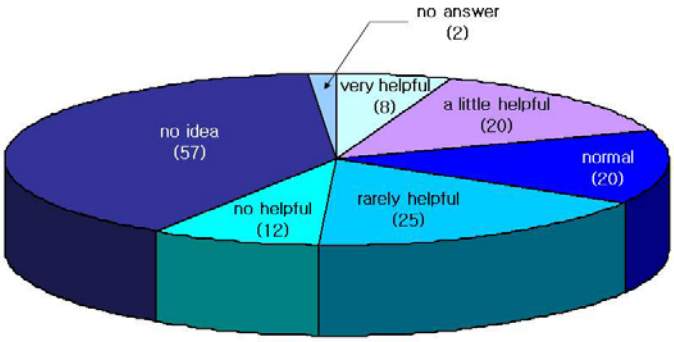

Figure 1 Usefulness of prior-knowledge

3.2.3 Communication means of earthquake

In this question, it was analyzed that most respondents learned the earthquake data on TV. It means that they learned those data on TV and it is also very efficient way to communicate them. However, about 80% of respondents, who learned them by internet, newspaper and magazine, and scientific books, acquired them usually. It was estimated that TV was just transferred method of those knowledge to people without interested in earthquake. However, the quality information which were internet, newspaper and magazine, and scientific books should be transferred them to people with interested in earthquake. The results of comparison with age categories were given by table 3.3.

Table 3.3 Age categories' earthquake material connecting media (included overlapping answer)

Classification	TV	Radio	Internet	Magazine / Newspaper	Scientific books	Others	don't-know	Total
under 10s	0	0	0	0	0	0	0	0 (0%)
10s	0	0	0	0	0	0	3	3 (2%)
20s	4	0	4	1	1	0	17	27 (17.8%)
30s	11	0	7	2	1	0	21	42 (27.6%)
40s	18	1	1	4	0	1	6	31 (20.4%)
50s	14	0	1	4	1	0	11	31 (20.4%)
60s	4	0	0	0	1	0	2	7 (4.6%)
over 70s	0	0	0	0	1	0	10	11 (7.2%)
Total	51 (33.6%)	1 (0.7%)	13 (8.6%)	11 (7.2%)	5 (3.3%)	1 (0.7%)	70 (46.1%)	152 (100%)

3.2.4 Action plan during earthquake

The majority of people didn't have learned an education and training about how to do during earthquake. Also half of them who had learned an education and training answered in the army and office. It represented that an absolute majority were men and equal educational opportunity were unfair between men and women. As a result, learning the education and training about them it should be considered of sexuality, age categories, and life-style of residents.

Table 3.4 Training places

Classification	Answers
School	1 (0.7%)
Office	2 (1.4%)
Army & Civil defense	9 (6.3%)
Association & Club	1 (0.7%)
Others	12 (8.3%)
don't-know	119 (82.6%)
Total	144 (100%)

3.3 Situation during Earthquake

3.3.1 Place of earthquake perception

The earthquake was occurred at 21:00 on Saturday (Local time) so there were many residents stayed at their home and they felt it. In generally, it should be prepared the education data for activities during earthquake in buildings.

3.3.2 Awareness during earthquake

Many of them thought the safe of their family and themselves. According to this answer, if they learned the education of earthquake it would be predicted a huge ripple effect on their own family.

3.3.3 Mental states during earthquake

The results of this question were as follows.

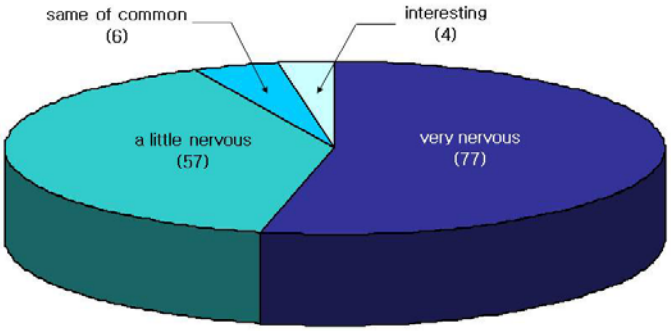

Figure 2 Mental states during earthquake

3.3.4 Action during earthquake

Table 3.5 was shown the results of this question. The education of practical action, which was safe management during earthquake, was very weak. It was very important the education through experience.

3.4 Awareness and Behavior after Earthquake

3.4.1 Intention of educational participation

Most respondents wanted to join in the program about how to do if earthquake were occurred. It means that the intentions of residents are very positive. The government has a duty that should be lead to take the initiative participation by residents.

3.4.2 Preference of educational program

Many people wanted to participate in earthquake education program by experience (41.4%) and then they also wanted to join in this program by lecture (23.6%) and leisure (22.2%). So it should be developed the program and built the facilities by government.

Table 3.5 Action for personal safe (included overlapping answer)

Classification	Answers
No countermeasure	53 (35.8%)
Evacuation	35 (23.6%)
Evacuation after safe management	11 (7.4%)
Observe the situation	37 (25.0%)
Others	11 (7.4%)
don't-know	1 (0.7%)
Total	148 (100%)

3.4.3 Visit intention of earthquake experienced place

The result of this was shown in table 3.6. It was required that the education of disaster prevention should be offered a complex concept like as an educational experience including leisure. They also answered that they hope to participate with their family.

Table 3.6 Visit intention of earthquake experienced place

Classification	Answers
Visit with family	69 (47.9%)
Visit only children	4 (2.8%)
Visit if it got an opportunity	66 (45.8%)
Rarely visit	4 (2.8%)
No visit	1 (0.7%)
Total	144 (100%)

3.4.4 Educational organization of earthquake

The results of this were as follows. It might be completed inclusively and collectively by the government or local government.

Table 3.7 Educational organization of earthquake (included overlapping answer)

Classification	Answers
Government & Local government	74 (49.0)
TV	49 (32.5%)
Newspaper	2 (1.3%)
School	23 (15.2%)
Others	3 (2.0%)
don't-know	0 (0%)
Total	151 (100%)

3.5 Opinion of Earthquake Prevention Countermeasures

3.5.1 Awareness of residential district safety

In this research, the residential types of respondents were as follows.

Table 3.8 Residential types

Classification	Answers
House	72 (50.0%)
Row houses	22 (15.3%)
Apartment	43 (29.9%)
Studio apartment	1 (0.7%)
Others	6 (4.2%)
Total	144 (100%)

About safety of residences, they responded that half of them thought to be danger and 30% thought normal. They also wanted to estimate their houses in detail because they have been afraid of it since Ohdaesan earthquake. Especially, it should be informed residents that danger of crack and collapse in buildings or emergency evacuation from an unexpected incident by public education and information.

3.5.2 Corresponding of weak houses

As their houses were danger, half of them responded to repair and estimate safety of their houses. It was very positive response because they experienced the earthquake. Therefore it would be demanded that the relation between technical development and revitalization of industry.

3.5.3 Role of Government

The residents wanted that government should notify them of crisis situation and action process. In connection with this, National Emergency Management Agency (NEMA) which was the organization of disaster had established the action plan of earthquake since 2005. Also they wanted that it should be reinforced seismic design code for not only high-rise buildings and infrastructures but also small scale buildings including residences. It should be also reinforced safety of school and gymnasium which were using shelters from disaster.

Table 3.9 Expected government's role by residents (included overlapping answer)

Classification	Answers
Rapid communication	82 (32.7%)
Regular education enforcement	54 (21.5%)
Reinforcement of safety and code for public buildings	34 (13.5%)
Safety direction enforcement of private buildings	30 (12.0%)
Reinforcement of buildings' law	47 (18.7%)
don't-know	4 (1.6%)
Total	251 (100%)

4. CONCLUSION

After Hongsung earthquake (1978, M5.2), it was first experienced for residents who have lived in Pyongchang area. By this reason, it was surveyed of information of disaster prevention before earthquake, an act and mentality during shock and change of awareness and henceforth measure after it in National Institutes for Disaster Prevention (NIDP) by 144 persons who have no experienced the shock ever. The summaries of survey's results were followed.

On the knowledge of earthquake before experience, the respondents predicted that there would be an earthquake, but they didn't know when it would be. Most of them had been got the information on the earthquake by TV and Internet. In the situation of earthquake, they stayed in buildings because of its occurring at evening time. They answered that their thinking was the family's safety at that moment and they felt fearful and ran about in

confusion. The little portion of them answered that they escaped after finishing safety management. In awareness and action after shock, most of them responded that they want to participate in education program on how to do in earthquake. And they preferred the type of experience program to the lecture type program. Over the 90 percents of the respondents wanted to visit with their family, if the facilities are prepared. Then the most of respondents suggested that the government and mass media should have responsibility to educate them. On the resident's opinion on the national countermeasures, most of respondents answered that they recognized their vulnerability of their house and half of them had the intents to repair their houses. The roles of government are suggested as rapid information dissipation, regular education enforcement, and strengthen the safety regulation on the building.

Finally, Ohdaesan earthquake which is the first sensible earthquake during 29 years was the meaningful earthquake to the earthquake countermeasures in Korea. The result of this study on the awareness and action of residents would be considered to be used as the basic materials for national earthquake countermeasures policies.

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