

ANALYSIS OF THE UNSUITABLE ACTIONS TAKENS BY UNIVERSITY STUDENTS AFTER THE 2018 HOKKAIDO EASTERN IBURI EARTHQUAKE

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1. Introduction

For those who live in Japan, disaster prevention is major matter because Japan is known to have frequent disaster. Therefore, various countermeasures have been proposed. However, when the earthquake occurred at eastern Iburi area in Hokkaido on Sept6 in 2018, there were multiple problems happened. For example, some people suffered from insomnia. Also, there were people who took unsuitable actions after the earthquake.

In this paper, the discussion focused on finding factors that affected unsuitable actions people took after the earthquake to propose countermeasures in case next earthquake happens in Hokkaido. Unsuitable actions are listed in Tokyo Manual for disaster prevention. In Tokyo Manual for disaster prevention, unsuitable actions are defined as actions which hurt yourself and cause next accident such as fire. In this paper, experience level, nationality, and academic status were used for analysis.

2. Survey method and Sample features

2.1 Survey outline

After eastern Iburi earthquake occurred, survey was conducted to clarify post disaster behavior, challenges and preparedness of Japanese and international students living in Hokkaido at the time of the earthquake on September 6. Questions of the survey is shown at Table 1. This survey was conducted after the earthquake during 1 month. This survey was written in 2 languages, Japanese and English. This survey were spread by snowball sampling which means existing subjects recruit new subjects. There were 7 categories and 47 questions in the survey.

Table 1 Category and number of questions

Category	Number of questions
Disaster prevention measures	7
Respondent information	13

2.2 Sample characteristics

In this paper, data was categorized into 3 major group to analyze data: Academic status, Experience of disaster prevention, gender, student status. These categorized data are shown from Table 2 to Table 5. The number of responses in total was 845.

Table 2 Nationality

Nationality	Number of responses	Percentage
International student	182	22%
Japanese student	663	78%

Table 3 Academic status

Academic Status	Number of responses	Percentage
Undergraduate student	488	58%
Doctoral course student	114	13%
Master course student	228	27%
Other	15	1.8%

Table 4 Experience of disaster prevention

Major earthquake experience	Number of responses	Percentage
Yes	439	52%
No	406	48%
Disaster prevention education		
Yes	738	87%
No	107	13%
Disaster drill experience		
Yes	675	80%
No	170	20%
Disaster prevention manual		
Yes	174	21%
No	671	79%
Hazard map		
Yes	131	16%
No	714	84%
Volunteer experience		
Yes	47	6%
No	798	94%

2.3 Research methodology

First, unsuitable actions were categorized based on Tokyo Manual for disaster prevention. Table 5 shows categorized answers from responses. According to Tokyo Manual for disaster prevention, 3 types of action can be seen as unsuitable actions. First, use outlet is unsuitable because this action can cause fire. Second go outside quickly is unsuitable because this action causes damage in your body. Third, protect things is unsuitable because this also causes damage in your body.

After categorizing unsuitable actions, cross tabulation analysis was used to find relation between individual characteristic and unsuitable actions. Chi-square is used to evaluate the relationship between unsuitable actions and individual characteristics.

Table 5 Unsuitable Actions

Unsuitable actions	Answers
Use outlet	Information gathering by television
Go Outside	Moved to a park or open space
	Go Outside
	Quickly ran outside
	Moved to a park or open space
	Ran inside a sturdy looking building
	Went outside
Protected important possessions	Checked for damage in the immediate surroundings
	Protected expensive or important possessions

3. Results and discussion

3.1 Result

Table 6 to 13 shows the result of cross tabulation analysis.

Table 6 Academic status, $p = 0.024 < 0.05$

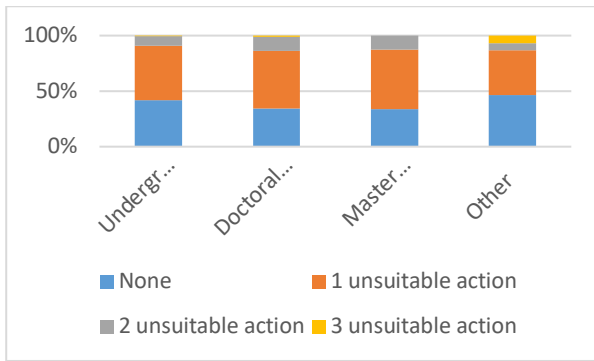


Table 7 Experience of Major earthquake, $p = 0.35 > 0.05$

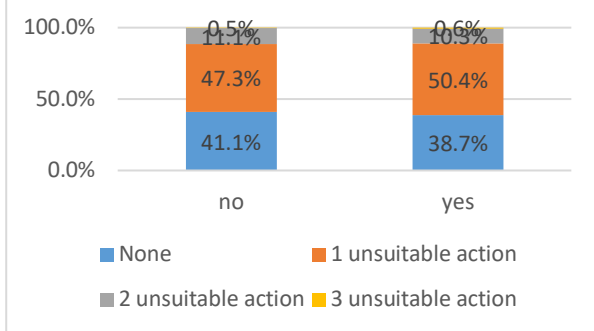


Table 8 Experience of disaster education, $p = 0.63 > 0.05$

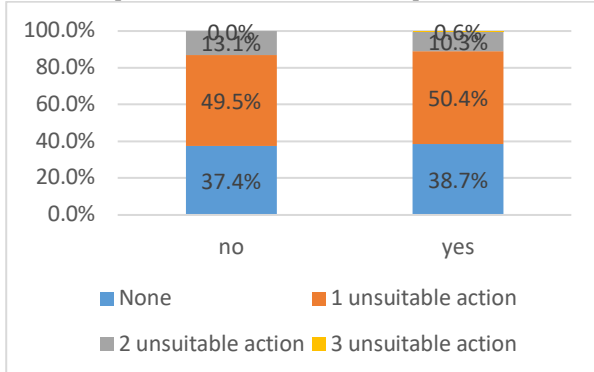


Table 9 Experience of disaster drill, $p = 0.04 < 0.05$

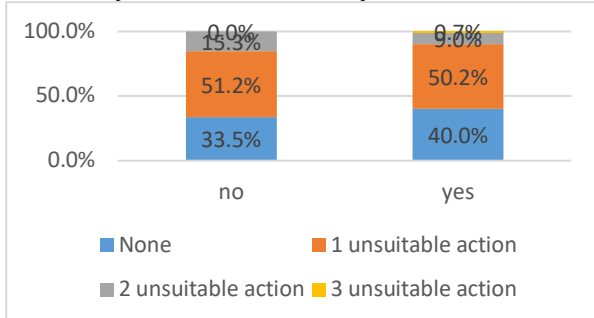


Table 10 Experience of disaster manual, $p = 0.22 > 0.05$

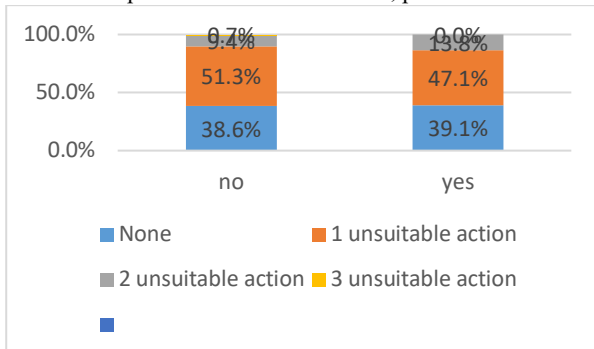


Table 11 Experience of Hazard map, $p = 0.28 > 0.05$

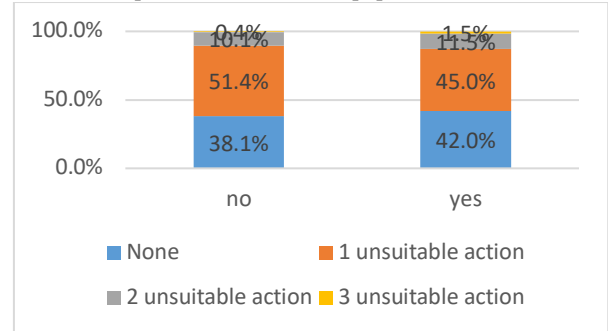


Table 12 Experience of volunteer, $p = 0.13 > 0.05$

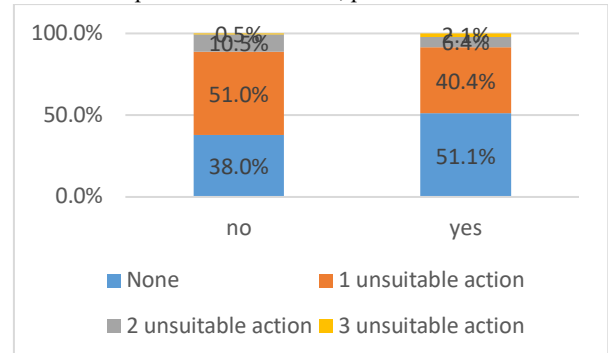
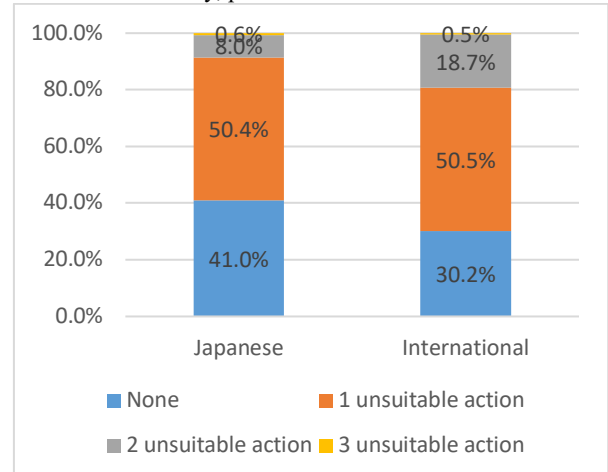


Table 13 Nationality, $p = 0.0002 < 0.05$



3.2 Discussion

For table 6, it can be said that the higher the academic status, the higher probability they took unsuitable actions. This can be because the higher the academic status, the more responsibility on the study they do. Therefore, the answers such as go outside to go to laboratory was found.

For table 7 to 12, it can be said that if they have had some type of disaster related experience, they tend to take 1 unsuitable actions more than those who have not. However, those who had disaster related experiences tend not to take more unsuitable actions.

For table 13, international students tend to take more unsuitable actions than Japanese students. From nationality and experience level, international students can be said that they have not had disaster related experiences which caused them to take unsuitable actions during and after the earthquake.

4. Conclusion

In this study, relationship between unsuitable actions and individual characteristic were analyzed by cross tabulation

analysis. When the academic status is higher, unsuitable actions tend to appear more. Also, when there was not disaster related experience, unsuitable actions tend to appear more. About nationality, international students tend to take more unsuitable actions than Japanese students.

References

- 1) Tokyo Metropolitan Government, Tokyo Bosai, pp.23-26, 2015.
- 2) Tomoko Kishida, Mihoko Matsuyuki, Study of Differences of Preliminary Knowledges and Preparation for Disasters between Japanese and International Undergraduate and Graduate Students, 2