

PRELIMINARY RESULTS OF A SURVEY ON DISASTER AWARENESS OF PERSONNEL AND STUDENTS OF KOCAELI UNIVERSITY

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Abstract

The aim of this study is to investigate the level of awareness of the personnel and students in Kocaeli University, Umuttepe Campus about the disasters, earthquakes in particular, their impacts and mitigation measures. Only the quantitative data collection method was employed and the data was collected by a questionnaire via Internet for the 10% of the population for each group, in the 2008-2009 Fall and Spring Term. Preliminary results of the survey show the influence of education level to the awareness and importance of the formal education to raise the awareness level of the students.

Introduction

Turkey is situated in tectonically very active area and exposed to several natural hazards, mostly earthquakes. From the beginning of the 20th century, 87,000 people died, 210,000 people injured and 651,000 houses were destroyed or damaged in Turkey as consequences of various natural disasters.

Earthquakes that occurred on August 17, 1999 in Kocaeli and November 12, 1999 in Düzce were the most devastating disasters which deeply affected whole Marmara Region from both economical and social point of view. These earthquakes affected more than 20 million people in the Marmara Region, causing more than 18,000 people lose their lives and billions of dollars of economic loss in the Turkish economy. The impact of the earthquake was severe because the event was of a high magnitude and affected a very densely populated and industrialized region.

Kocaeli University was one of the most affected institution and 70% of its buildings including Faculty of Medicine and many Campuses located in different towns of the city, were collapsed or heavily damaged during the Kocaeli Earthquake. Construction of a new Campus, which is called as Umuttepe, has been initiated in 2000 and a very successful reconstruction

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process has been succeeded at 2004, including the Faculty of Medicine Hospital Building which is designed and applied with seismic isolation system, as a first example in Turkey. Construction of the rest of the buildings is still going on and will be completed by the end of 2010.

Those earthquakes also highlighted the key issues that need to be addressed to reduce the costs of future natural disasters in the country (World Bank, 1999).

It is very well known from the past experiences all over the World that structural mitigation is essential but not enough to cope with the aftermath of the disasters. Planning, preparedness, non-structural measures, education, training and drills are the complementary actions to build the capacity in a society to mitigate the effects of disasters. In other words, it is also essential to aware the community about the impact of disasters to be successful in mitigation. In order to raise awareness, formal and informal education efforts have been carrying out in many disaster prone countries, considering the previous experiences of the community and best practices of different communities. Hyogo Framework for Action is a global road map for Disaster Risk Reduction and its third item among five priorities for action is to use knowledge, innovation and education to build a culture of safety and resilience at all levels.

“Community-based disaster preparedness” concept became a very important issue on the agenda of several institutions in Turkey, after the 99 Earthquakes and education and training programs with similar content were developed and disseminated by them. (Yazici-Cakin, 2005) These programs are intended to face the challenge of devising strategies to reach out to large urban populations, to empower people at the individual, family, school, workplace, agency, organization and neighborhood level to participate in disaster mitigation (Yazici-Cakin, 2006).

The awareness and preparedness level of the community, after these education and training efforts has been evaluated by different researchers for different regions. For instance; communication with local communities and preparedness of local communities to earthquake hazard has been surveyed in Kocaeli (Yakut, 2004). Another detailed research was carried out in Istanbul situated in an area which is under high risk of a major future earthquake at the western part of the North Anatolian Fault Zone (Fisek and Kabasakal, 2008). They both are pointed out that people living in those regions are not informed, aware and prepared enough for future disasters. That means the efforts have been inadequate or imperceptible by the local communities.

Disaster Awareness Survey

Kocaeli University had impact damage and lessons learned by the experience of the August 17, 1999 Kocaeli Earthquake (Arisoy, 2000). On the other hand, 10 years passed after the earthquake and either its personnel or student profile has been changed a lot. Today, Kocaeli University has 58.000 students, 1.902 academic and 988 administrative personnel. Most of the students were young children at the age of 7–11 in 1999 and do not remember or not experienced the earthquake as well as some of them are coming from different cities of Turkey. Some of the personnel was retired or left the university and some new personnel were assigned from different places. So, it is very important to evaluate the awareness level of the community in the Campus considering the change in the community.

Therefore, a survey was conducted to investigate the level of awareness of the personnel and students in Umuttepe Campus about the disasters, earthquakes in particular, their impacts and mitigation measures. We aimed to investigate whether curriculum make difference on the level of awareness of the students or not. Therefore, first and fourth grade students of several departments situated in this Campus were selected as samples. Academic and administrative personnel have been compared also to investigate if there is a difference of awareness level between these two groups of personnel.

The questionnaire aimed to determine the awareness level on the following subjects:

- Information about natural disasters,
- Previous experience of disaster,
- Difference at age groups,
- Gender mainstreaming,
- Contribution of formal and informal education,
- Attitude change,
- Legal arrangements after 1999 earthquakes,
- Priorities of the individuals in case of a disaster,

The survey consists of qualified questions which were selected after a detailed investigation of national and international studies and feed backed by some of the faculty and experts in University, to be proper to analyze and determine the level of awareness of personnel and students on natural disasters.

Model

Relational scanning model is an analysis method to determine the relation between two or more variables (Karasar, 1994). In order to determine the level of awareness in a community, education, gender and age factors are very important criteria. Therefore, relational scanning model was applied in this survey for comparison of those variables.

Sampling

In this study, only the quantitative data collection method was employed and the data was collected by a questionnaire via Internet (<http://anket.kocaeli.edu.tr/daf>) in the 2008-2009 Spring Term.

Sampling was made among the first and fourth grade students of Kocaeli University Umuttepe Campus (Faculties of Engineering, Technical Education, Education, Law, Economics and Administrative Sciences, Communication, Arts and Science Education and Vocational School of Health) and also for academic and administrative personnel. The Medicine Faculty was not included in the survey since they participated to the pilot survey which was applied to 156 first grade students of Medicine Faculty, in 2008-2009 Fall Term to evaluate the items in the questionnaire. Total number of students is 449 (262 of first grade, 187 of fourth grade) and total number of personnel is 146 (102 of academic and 44 of administrative). The number of study groups is shown in Table 1.

Table 1- Sample Numbers

	STUDENTS		PERSONNEL	
	<i>First Grade</i>	<i>Fourth Grade</i>	<i>Academic</i>	<i>Administrative</i>
Total Numbers	2.616	1.874	1.023	442
Sample Numbers (10%)	262	187	102	44

Data Collection

In this questionnaire, we aimed to measure the awareness and knowledge of the personnel and the students at Umuttepe Campus, Kocaeli University about natural disasters, primarily earthquakes.

First, we pooled the questions to be asked in the questionnaire through looking over the literature on the issue. Then we sent out these questionnaire to the academicians interested in

various fields of study ranging from psychology, educational sciences, Turkish language, geology, geophysics to chemical engineering, civil engineering and environmental engineering. After that we prepared the questionnaire form by using a 3-point Likert-scale, in accordance with the views we received. These questionnaire composed of 25 questions was responded 156 students from the Faculty of Medicine as pilot study. Then, credibility and validity of the questions were analyzed after the pilot study application.

According to the results of factor analyses we made on the 25 questions with independent variables, 6 questions were eliminated as being under the factor value of 0,45 and the questionnaire was applied with its final form composed of the rest 19 questions and independent variables. The results of factor analyses are shown in the Table 2.

Table 2- Exploratory Factor Analysis Results Explained Total variance = 64,868

Item No	Fac.1	Fac.1	Fac.3	Fac.4	Fac.5	Fac.6	Fac.7
15	0,859						
17	0,841						
12	0,683						
14	0,639						
4		0,769					
5		0,659					
9		0,635					
21			0,789				
22			0,733				
25			0,602				
23			0,465				
13				0,749			
20				0,646			
6					0,744		
11					0,661		
7						0,817	
16						0,555	
1							0,854
3							0,496

Internal consistency factor analysis was employed to evaluate the reliability of questionnaire and the result was found as $\alpha=0,82$. This value is sufficient for the level of reliability.

Data Analysis

In this study, knowledge and awareness level for the group of personnel was associated with variables of duty (academic or administrative), gender, age groups, previous experience of disaster and participation of any training program before. For the group of students, it was examined with the variables of gender, age groups, faculty, previous experience of disaster and participation of any training program before.

Statistical analysis of the survey was done by using SPSS 10 program. One-way ANOVA-test (F-test) was applied to test for differences among two or more independent groups, like age groups. Also, t-tests were applied for the survey in order to compare the means of two groups, e.g. academic and administrative personnel, female and male groups.

The number of respondents for personnel and students are 466 and 296 for first and fourth grade students ($n=735$); 129 and 61 for academic and administrative personnel ($n=190$), respectively. It means that expected sampling values shown in Table 1. were satisfied.

Survey Results

Preliminary results of the evaluation of the survey for personnel and students are given in the following sections separately. Analysis of survey has been evaluated by the application of t-tests and F-tests according to the questions.

Personnel

The detailed numbers and percentage of the respondents considering the independent variables which are their duty, sex, age, previous experience and participation of training are given in Table 3.

Tablo 3- Sample characteristics for personnel (n=190)

	Frequency	Percent
Personnel Duty		
Administrative	61	32,1
Academic	129	67,9
Sex		
Female	108	56,8
Male	82	43,2
Age		
20-25	8	4,2
26-30	48	25,3
31-35	40	21,1
36-40	40	21,1
40 and upper	54	28,4
Previous experience		
Yes	126	66,3
No	64	33,7
Participation of training		
Yes	17	8,9
No	173	91,1

Result of t-test for the awareness level of academic and administrative personnel is given in Table 4. It shows remarkable difference between two groups of personnel [$t_{(188)}=-2,48$, $p<0.01$ or $p<0.05$]. Awareness level of academic personnel ($\bar{x}=43,07$) is higher than administrative personnel ($\bar{x}=40,77$).

Table 4- Awareness level t-test according to the duty type

Personnel	N	\bar{x}	S	sd	t	p
Administrative	61	40,77	5,96	188	-2,48	,014
Academic	129	43,07	5,99			

There is no significant difference in t-test results [$t_{(188)}=1,05$, $p<0.001$] for awareness level associated with gender as shown in Table 5.

Table 5- Awareness level t-test according to gender

Personnel	N	\bar{x}	S	sd	t	p
Female	108	42,74	5,69	188	1,05	,294
Male	82	41,80	6,52			

Results of F-test for awareness of the personnel shows significant difference according to age groups [$F_{(4-185)}=7,237$, $p<0.001$] (Table 6). Scheffe-test was applied to determine the difference in the age groups and the results show that awareness level is the highest ($\bar{x}=44,51$) in the age group of over 40. It follows 36-40 age group ($\bar{x}=43,80$), 26-30 age group ($\bar{x}=41,68$), 31-35 age group ($\bar{x}=40,07$) and 20-25 age group ($\bar{x}=35,50$), respectively.

Table 6- Awareness level F-test according to age groups

	Sum of Squares	Sd	Mean Square	F	P	Mean Difference
Between Groups	941,473	4	235,368	7,237	0,000	1-4, 1-5, 3-5
With in Groups	6016,969	185	32,524			
Total	6958,442	189				

There is no significant difference in t-test results for the awareness levels of the personnel associated with their previous disaster experience [$t_{(188)}=1,58$, $p<0.001$] and participation of any training program before for disaster preparedness [$t_{(188)}=0,17$, $p<0.001$] as shown in Tables 7. and 8., respectively.

Table 7- Awareness level t-test according to previous disaster experience

	N	\bar{x}	S	sd	t	p
Yes	126	42,83	6,08	188	1,58	,114
No	64	41,35	5,95			

Table 8- Awareness level t-test according to participation of any training program before

	N	\bar{x}	S	sd	t	p
Yes	17	42,58	6,84	188	0,17	,858
No	173	42,31	6,00			

Students:

The detailed numbers and percentage of the respondent students considering the independent variables are given in Table 9.

Table 9- Sample characteristics for students (n=735)

	Frequency	Percent
Faculty		
Education	68	9,3
Arts and Science Education	103	14,0
Law	14	1,9
Economics and Administrative Sciences	101	13,7
Communication	54	7,3
Engineering	261	35,5
Technical Education	110	15,0
Vocational School of Health	24	3,3
Class		
First grade	466	63,4
Fourth grade	269	36,6
Sex		
Female	320	43,5
Male	415	55,5
Age		
15-20	359	48,8
21-25	363	49,4
26-30	13	1,8
Previous experience		
Yes	414	56,3
No	321	43,7
Participation of training		
Yes	146	19,9
No	589	80,1

Students of eight Faculties located in Umuttepe Campus are involved in this survey. F-test results show that the students of Engineering Faculty have the highest awareness level (Table 10). The Faculties of Economics and Administrative Sciences, Law, Communication and Arts and Science Education follow it with close mean values. Relatively low values belong to Education, Technical Education and Vocational School of Health. The number of students responded to questionnaire for each Faculty and their arithmetic mean is given in Table 11.

Table 10- Awareness level F-test for students according to Faculties

	Sum of Squares	Sd	Mean Square	F	P	Mean Difference
Between Groups	1534,093	7	219,156	5,547	0,000	1-6, 6-7
With in Groups	28722,629	727	39,508			
Total	30256,721	734				

Table 11- Distribution and arithmetic mean of the respondents according to their Faculty

Faculty	Frequency	Mean
Education	68	36,83
Arts and Science Education	103	39,00
Law	14	39,28
Economics and Administrative Sciences	101	39,40
Communication	54	39,16
Engineering	261	40,24
Technical Education	110	36,66
Vocational School of Health	24	36,08
Total	735	38,87

Result of t-test for the awareness level of first and fourth grade students shows remarkable difference between these two groups of personnel [$t_{(733)}=-2,849$, $p<0.005$] (Table 12). Awareness level of fourth grade students ($\bar{x}=39,75$) is higher than first grade students ($\bar{x}=38,36$).

Table 12- Awareness level t-test for students according to their grades

	N	\bar{x}	S	sd	t	p
First Grade	466	38,36	6,36	733	-2,849	0,005
Fourth Grade	269	39,75	6,43			

There is no meaningful difference in t-test results of students [$t_{(733)}=0,201$, $p<0.001$] for awareness level associated with gender which is similar to the results for personnel as shown in Table 13.

Table 13- Awareness level t-test for students according to gender

	N	\bar{x}	S	sd	t	p
Female	320	38,92	6,18	733	0,201	0,841
Male	415	38,82	6,60			

Result of F-test for awareness of the students shows significant difference according to age groups [$F_{(2-732)}=6,719$, $p<0.001$]. It is shown in Table 14. Scheffe-test was employed to examine the difference in the age groups and the results show that awareness level is the

highest ($\bar{x}=43,53$) in the 26-30 age group. It follows as 21-25 age group ($\bar{x}=39,38$) and 15-21 age group ($\bar{x}=38,18$), respectively.

Table 14- Awareness level F-test for students according to age groups

	Sum of Squares	Sd	Mean Square	F	P	Mean Difference
Between Groups	545,457	2	272,729	6,719	0,001	1-2, 1-3, 2-3
With in Groups	29711,264	732	40,589			
Total	30256,721	734				

Remarkable difference was obtained [$t_{(733)}=7,944$, $p<0.001$] on the awareness level between the students who experienced of disaster before and had no experience as shown in Table 15. Experienced students have higher value ($\bar{x}=40,46$) than inexperienced ($\bar{x}=36,81$) ones.

Table 15- Awareness level t-test for students according to previous disaster experience

	N	\bar{x}	S	sd	t	p
Yes	414	40,46	6,23	733	7,944	,000
No	321	36,81	6,06			

Finally, the awareness level of the students was compared by t-test according to their previous attendance to any formal or informal disaster preparedness education program before. This t-test shows significant difference [$t_{(733)}=6,416$, $p<0.001$] on the awareness level of the students who trained taken before ($\bar{x}=41,84$) than not trained ($\bar{x}=38,13$) students (Table 16).

Table 16- Awareness level t-test for students according to participation of any training program before

	N	\bar{x}	S	sd	t	p
Yes	146	41,84	6,50	733	6,416	,000
No	589	38,13	6,18			

Discussion and Recommendations

Because of the limited time, we could only evaluate the first part of the questionnaire that examining the awareness level of the personnel and students. Second part of the questionnaire was examining the attitudes of the society for the action taken to mitigate the impact of disasters. So, this is a preliminary report of data had been so far and shows us very interesting results.

The difference between the awareness level of academic and administrative personnel is associated with the positive influence of education level and responsibilities. Academic personnel had been involved in decision making processes during the reconstruction of the University after 99 Earthquake. They have also very important role in designing the vision and mission of the University. On the other hand, most of the administrative personnel is involved in routine duties.

Comparison of age group show similar results for both personnel and student groups. This result is anticipated, because older age groups are supposed to be more sensitive and responsible to the problems in their communities, in Turkey, regarding to their experiences.

In this study, samples have very homogeneous educational background, among their group, from the gender point of view on the contrary to unequal access of women to education and knowledge opportunities in general. This might be the reason for gender mainstreaming did not show meaningful difference for both personnel and student groups.

It is quite unexpected that there is no significant effect of previous disaster experience and participation of training program before on the awareness level of the personnel contrary to students' values. Time might be one of the reasons to diminish the influence of the earthquakes stroke ten years ago. On the other hand students were young children in 1999 and the experiences at childhood reminiscences and experiences might be more influential and permanent. Besides, most of the training efforts were concentrated on the school children and teachers rather than adults and contents of the community based disaster awareness training programs might be inadequate to face the needs of the community and could be poorly disseminated.

Students of Faculty of Engineering have the highest awareness level among others. Most of these students are from Department of Geology and Geophysics and have the privileges of taking courses related to disasters. The contribution of these courses makes the difference and should be common lectures for other faculties as well. Similarly, remarkable difference between the awareness level of the first grade and fourth grade students show the contribution of the curriculum during underground education in Kocaeli University.

In this study we evaluated personnel and students data separately but it is also needed to compare these two groups with each other and the study will be complemented by evaluation of attitude survey data.

Evaluation of data so far showed us the importance of the formal education to raise the awareness level of the people. In order to build the capacity in Umuttepe Campus disaster related courses in the curriculum should be disseminated to all students as well as administrative personnel by using Distance Learning System.

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