

The activities of Turkish Civil Defence Search and Rescue Units from 1986 to 2007

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ABSTRACT

Objective: The objective was to determine the activities of Civil Defence Search and Rescue (SAR) Units.

Methodology: This descriptive study was conducted at the General Directorate of Civil Defence in Ankara, Turkey, from July 8, 2008 to August 15, 2008. The data were derived from the end-duty reports of Search and Rescue Units which were available from 1986 to 2007. The descriptive statistics were presented as frequency and percentage distributions.

Results: There were 1306 end-duty reports. Erzurum Search and Rescue Unit had the highest number of activity (237, 18.1%), whereas Izmir Search and Rescue Unit had the lowest number of activity (32 activities, 2.5%). Of the activities, 1011 (77.2%) took place from 2004 to 2007. In earthquakes, on the average, 29.8 personnel per incident were on duty. In the traffic accidents the average number of personnel who responded per activity was the lowest (5.8). All of the personnel were deployed to incident sites via ground transport. In the floods, the highest number of victims (846 victims, 40.2%) were rescued. The highest number of bodies were extricated in earthquakes (642 bodies, 37.8%). The total number of days passed in the activities was 2672. Of the 1306 activities, 655 (50.1%) were search and rescue.

Conclusion: This paper for the first time revealed the activities of Search and Rescue Units in Turkey. The information provided will be useful for the Search and Rescue Units, national and international organizations which are involved in disaster response.

KEY WORDS: Civil Defence, Disaster, Incident, Search and Rescue, Turkey.

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INTRODUCTION

In the World War I and II, civilians were affected more than the military forces.¹⁻³ This revealed the need of civil defence. The North Atlantic Treaty Organization (NATO) which was founded in 1949, considered civil defence among its priority objectives.⁴ In 1957, NATO called its member states to establish an active national civil defence organization.⁵

In Turkey, Civil Defence Law was passed in 1958 and was in action in 1959.⁶ It was the basis of civil defence organization in Turkey. According to this law, Civil Defence General Directorate was founded under the Ministry of Interior and it was this directorate's responsibility to establish, equip, train and manage the civil defence organization. Civil Defence is not limited with war time, but it also has a role in disasters of all kinds.

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When a disaster strikes, communication, transportation, search and rescue (SAR), and emergency health services are very vital and should be provided immediately. The victims who need Search and Rescue (SAR), usually have a very limited time. Because of this, SAR activities should be provided immediately with well equipped and trained professional SAR teams. Planning and coordination are very important for the success of SAR. In Turkey, the SAR services are provided by Civil Defence SAR Units and teams, fire departments, Turkish Armed Forces, and, other government and non-government organizations.

After the Marmara Earthquake which occurred in 1999⁷, the number of Civil Defence SAR Units were increased to 11 (Ankara, Adana, Afyonkarahisar, Bursa, Diyarbakir, Erzurum, Istanbul, Izmir, Sakarya, Samsun and Van) (Figure 1).⁸ The services which are provided by these Units in war, disasters, major fires and accidents, are presented in Table-I.

In 2009, Prime Ministry Disaster and Emergency Management Presidency was established and Civil Defence General Directorate was abolished.⁹ The Civil Defence SAR Units' organization was not changed and they continue to function but under their provincial governors. When these units are to function in a region other than their own, the Presidency's assignment is required. Currently, in Turkey, the Civil Defence SAR Units are the major component of SAR activities. They play a significant role in the national and international incidents as far as SAR is concerned. The objective of this study was to determine the activities of Civil Defence SAR Units from 1986 to 2007.

METHODOLOGY

This descriptive study was conducted at the General Directorate of Civil Defence in Ankara,

Turkey, from July 8, 2008 to August 15, 2008. The data were derived from the end-duty reports of Search and Rescue Units which were available from 1986 to 2007. All of the reports were studied in the archive of the General Directorate. Some of the variables were the place, type, and date of the incident / disaster, departure time of the unit, mode of transport, number of deployed personnel, number of rescued victims, number of extricated bodies, ending time of the duty. The data were transferred from the end-duty reports to the study forms and analyzed with SPSS 17.0 statistical package program. The descriptive statistics were presented as frequency and percentage distributions. Hacettepe University Medical Research Local Ethics Committee (6 June 2008, LUT 08/27) and General Directorate of Civil Defence (8 July 2008, B050SSG0507000-449-3975) approved the study. There was no financial support for the study.

RESULTS

There were 1306 end-duty reports from August 25, 1986 to December 31, 2007. Of the activities, 224 (17.1%) were conducted in the region of Erzurum Civil Defence SAR Unit. The lowest number of activity occurred in the region of Izmir Civil Defence SAR Unit (31 activities, 2.4%). Erzurum Civil Defence SAR Unit had the highest number of activity (237, 18.1%), whereas Izmir Civil Defence SAR Unit had the lowest number of activity (32 activities, 2.5%) (Table-II).

The activities have been increasing since 2001. Of the activities, 1011 (77.2%) took place from 2004 to 2007 (Table-III).

Among the incidents, traffic accidents (407 incidents, 31.2%) were the leading incident type. The highest total number of Civil Defence SAR Unit personnel responded to traffic accidents (2343 person-

Table-I: The duties of Civil Defence Search and Rescue Units, 25 August 1986-31 December 2007, Turkey.

Duties
* Search and rescue, and first aid services
* Surveying nuclear, biological, chemical and radioactive materials and decontamination
* Social assistance for refugees and assistance to provide temporary shelters for them
* To coordinate the search and rescue activities of other national and international teams.
* To increase the theoretical, practical and physical capabilities of their personnel; to prepare and conduct training programs in order to keep their personnel ready for duty at any moment
* To train the governmental and non-governmental teams in search and rescue.
* The deployed Civil Defence Search and Rescue Units should provide their personnel's and public's needs depending on their own resources (food, water, shelter, etc). The Units should not rely on the affected regions' resources or relief materials.

Table-II: The distribution of activities according to Civil Defence Search and Rescue Units and their regions, 25 August 1986-31 December 2007, Turkey.

Unit /Region	The distribution of activities according to regions of units		The distribution of activities according to units	
	n	%	n	%
Erzurum	224	17,1	237	18,1
Sakarya	184	14,1	187	14,3
Afyonkarahisar	181	13,9	170	13,0
Bursa	161	12,3	159	12,2
Samsun	137	10,5	133	10,2
Istanbul	98	7,5	92	7,0
Ankara	79	6,1	114	8,7
Diyarbakir	78	6,0	65	5,0
Van	72	5,5	65	5,0
Adana	60	4,6	52	4,0
Izmir	31	2,4	32	2,5
Total	1.305*	100,0	1.306	100,0

*One duty which was done in Iraq, was not included.

nel, 16.8%). The lowest total number of personnel responded to storm incidents (17 personnel, 0.1%). In earthquakes, on the average, 29.8 SAR personnel per incident were on duty. In the traffic accidents the average number of personnel who responded per incident was the lowest (5.8). All the personnel were deployed to incident sites via ground transport.

The highest number of vehicles were used in traffic accidents (446 vehicles, 19.7%). Of the total

Table-III: The distribution of activities of Civil Defence Search and Rescue Units according to years, 25 August 1986 - 31 December 2007, Turkey.

Year	n	%
2007	295	22,6
2006	291	22,2
2005	232	17,7
2004	193	14,7
2003	97	7,4
2002	105	8,0
2001	40	3,1
2000	5	0,4
1999	15	1,1
1998	8	0,6
1997	6	0,5
1996	2	0,2
1995	5	0,4
1994	1	0,1
1993	1	0,1
1992	2	0,2
1991	2	0,2
1986	6	0,5
Total	1.306	100,0

vehicle use, 1428 (63.0%) were used in traffic accidents, drownings, missing cases, and floods. In the floods, the highest number of victims (846 victims, 40.2%) were rescued. In the traffic accidents and earthquakes 556 (26.4%) and 280 victims (13.3%) were



Fig-1: The regions of 11 Civil Defence Search and Rescue Units, 25 August 1986-31 December 2007, Turkey.

Table-IV: The distribution of activities of Civil Defence Search and Rescue Units according to type of the incidents and some other properties, 25 August 1986-31 December 2007, Turkey.

<i>Incidents</i>	<i>Distribution of activities according to incident type</i>	<i>Total No. of personnel per incident type</i>	<i>Average No. of personnel per incident type</i>	<i>No. of vehicles per incident type</i>	<i>Distribution of rescued victims according to incident type</i>	<i>Distribution of extricated bodies according to incident types</i>	<i>Distribution of the duration of duty according to incident type (day)</i>
	<i>n (%)</i>	<i>n (%)</i>	<i>n</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>
Traffic accident	407 (31,2)	2343 (16,8)	5,8	446 (19,7)	556 (26,4)	431 (25,4)	464 (17,4)
Drowning	222 (17,0)	1687 (12,2)	7,6	374 (16,4)	9 (0,4)	217 (12,8)	485 (18,1)
Missing	189 (14,4)	2049 (14,8)	10,8	291 (12,9)	86 (4,1)	62 (3,7)	545 (20,3)
Flood	114 (8,7)	2067 (14,9)	18,1	317 (14,0)	846 (40,2)	115 (6,8)	334 (12,5)
NBC	111 (8,5)	871 (6,3)	7,8	151 (6,7)	1 (0,1)	-	151 (5,7)
Collapse	79 (6,0)	1259 (9,1)	15,9	210 (9,3)	146 (6,9)	197 (11,6)	140 (5,2)
Fire	56 (4,3)	1214 (8,8)	21,7	160 (7,1)	11 (0,5)	-	74 (2,8)
Earthquake	45 (3,4)	1341 (9,7)	29,8	172 (7,6)	280 (13,3)	642 (37,8)	306 (11,5)
Besieged	39 (3,0)	309 (2,2)	7,9	51 (2,3)	140 (6,7)	5 (0,3)	46 (1,7)
Accident	19 (1,5)	347 (2,5)	18,3	51 (2,3)	10 (0,5)	14 (0,8)	35 (1,3)
Avalanche	14 (1,1)	244 (1,8)	17,4	20 (0,9)	12 (0,6)	10 (0,6)	41 (1,5)
Suicide attempt	8 (0,6)	78 (0,6)	9,8	14 (0,6)	7 (0,3)	-	8 (0,3)
Migration	2 (0,2)	34 (0,2)	17,0	4 (0,2)	-	4 (0,2)	42 (1,6)
Storm/Tornado	1 (0,1)	17 (0,1)	17,0	-	-	-	1 (0,1)
Total	1306 (100,0)	13860 (100,0)	10,6	2261 (100,0)	2104 (100,0)	1697 (100,0)	2672 (100,0)

rescued respectively. The highest number of bodies were extricated in earthquakes (642 bodies, 37.8%). The total number of days passed in the activities was 2672. Of these days, 545 (20.3%) passed for missing cases (Table-IV). Of the 1306 activities, 655 (50.1%) were SAR activity (Table-V).

DISCUSSION

In Turkey, 75% of the life and economic losses due to disasters were because of earthquakes.¹⁰ Traffic accidents were among the leading causes of major incidents which contributed to these losses (In the last 10 years: 6536231 accidents, 45188 died, 1519737 injured people).¹¹ Floods and landslides are frequent in Turkey and when they occur at highly populated areas, they also increase these losses.¹² The available risk maps or risk maps to be developed based on such statistics, will be important tools for Civil Defence SAR Units to plan their disaster responses.

In Turkey, there are earthquake, precipitation, avalanche, traffic accident and population density maps.¹³⁻¹⁸ Using these maps, risky areas can be

determined. Of all the activities, 985 (75.4%) were conducted in the regions of Erzurum, Sakarya, Afyonkarahisar, Bursa, Samsun and Istanbul Civil Defence SAR Units, and these areas were compatible with the risky areas in the maps. Especially for the region of Erzurum Civil Defence SAR Unit, all the maps coincided as far as risks were concerned. For the region of Istanbul Civil Defence SAR Unit the population density map was attracting the attention when compared with the other regions.

Table-V: The distribution of the activity types of Civil Defence Search and Rescue Units, 25 August 1986 - 31 December 2007, Turkey.

<i>Activities</i>	<i>n</i>	<i>%</i>
Search and rescue	655	50,1
Intervention	443	33,9
Survey and decontamination	113	8,7
Evacuation	76	5,8
Social assistance	19	1,5
Total	1.306	100,0

Civil Defence SAR Units mostly responded to traffic accidents (31.2%) and drownings (17.0%). The first three incidents in which the bodies were extricated most, were earthquakes, traffic accidents and drownings. Based on 2004 data, The World Health Organization prepared a report regarding causes of mortality in the world. In this report, except the diseases, traffic accidents, poisonings, falls, fires and drownings (in this order) were the first five causes of mortality in Turkey.¹⁹ There was a parallelism with our findings and WHO report as far as traffic accidents and drownings were considered.

The number of end-duty reports increased after 2001. This increase was attributed to the 8 Civil Defence SAR Units which were newly established and began operation in 2001. Besides, from 1986 to 2001, there might have been loss of reports due to poor documentation, notification and archiving procedures. Also, for some variables, there were missing data in many of the end-duty reports, so as a result of this these variables were excluded from the study. The number of personnel required in the activities may change due to the type, frequency, intensity and geographic distribution of the incident. As these may affect the total number of SAR personnel responding to a type of incident, the average number of SAR personnel for each type of incident was calculated. It was realized that in incidents which affected a large area, such as earthquake, fire, other accidents, flood, and avalanches (average number of SAR personnel per incident: 29.8, 21.7, 18.1, 17.4, respectively) more personnel were on duty compared to other incidents affecting a small and isolated area, such as traffic accidents, drownings, NBC, besieged people, suicide attempts, and missing individuals (average number of SAR personnel per incident: 5.8, 7.6, 7.8, 7.9, 9.8, 10.8, respectively.). There might be a necessity to increase the number of personnel in SAR Units depending on these properties of the incidents encountered in the areas of these units.

CONCLUSION

This paper for the first time revealed the activities of Civil Defence SAR Units. The information provided here will be useful for the Units, other national and international organizations which are involved in disaster response. The Units may use this paper to improve their activities. The other national organizations may consider the activities of Civil Defence SAR Units in their disaster response plans and seek mutual agreement protocols with them.

The neighbouring countries and international organizations may request their assistance when they

are in need. As the resources are very limited, in our global world, the specialized units of this sort may be very valuable globally if mutual agreement protocols can be established between the countries and international organizations as well.²⁰

In spite of the fact that, many victims are extricated by local citizens, immediately after the event using simple devices or bare hand, if the Civil Defence SAR Units can be used properly, the dead toll may be further decreased for those victims requiring more sophisticated rescue techniques and devices.²¹

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