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Brief Report

A study on rescuer drowning and multiple drowning incidents

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ABSTRACT

Introduction: Drowning is a leading cause of injury related death in many countries, including Turkey, where this study originates. The aim of the study is to define and examine "rescuer" drowning and Multiple Drowning Incidents (MDIs), and suggest preventative measures against MDIs. *Method:* The event of a person drowning can be complicated if an untrained person attempts to rescue the Primary Drowning Victim (PDV). This can result in the death of the "rescuer" as well as the PDV, which then becomes an MDI. This study categorizes these MDI incidents by examining online news media accounts in Turkey from 2005 through 2008. *Results:* In this 4-year period, 88 "rescuer" drowning incidents occurred in which 114 "rescuers" and 60 PDVs died from drowning in MDIs; 114 drowned "rescuers" rescued 47 PDVs before they died from drowning. Most of the "rescuers" were male and 42.1% of them were under the age of 18. Most of the drowning incidents (68.5%) occurred in fresh water (lakes/dams/water holes and rivers/creeks/streams). *Conclusion:* In this study, risk factors for drowning deaths include gender and entering in unguarded open water. An increased awareness of such risks as well as promotion of both swimming and rescue skills in water could help reduce MDIs. Parents who live close to fresh water sources with boys under the age of 18 years should be more aware of drowning risk because of their higher rates of deaths from drowning. *Impact on Industry:* The results of this study give the chance to policy makers and all other related people or organizations to see the whole picture of deaths by drowning and the results can be used to build up preventative strategies as swimming teaching and life guard education.

1. Introduction

Drowning is defined as the process of experiencing respiratory impairment from submersion/immersion in liquid, which may result in death, morbidity, or no morbidity (International Lifesaving Federation [ILS], 2007). The Global Burden of Disease study, which was first released at the end of the 1990s showed that drowning is one of the most common causes of death worldwide (Murray & Lopez, 1997; Rahman et al., 2009; Van Beeck, Branche, Szpilman, Model, & Bierens, 2005). Deaths by drowning incidents are an important cause of death from unintentional injuries (Ma, Xu, & Xu, 2010) and a leading cause of injury-related deaths in many countries (Krug, 1999; Peden, McGee, & Sharma, 2002; Weir, 2000). As beach and pool attendance increased steadily since the beginning of the 20th century, both for leisure and exercise purposes (Lanagan-Leitzel & Moore, 2010), people became more at risk of drowning. It is estimated that over 500,000 people lose their lives from drowning annually, which means more people die from drowning than from wars each year (Van Beeck et al., 2005).

In order to produce preventative measures against drowning incidents it is vital to collect and record sufficient and accurate information about the incidents to find out the associated factors related to drowning incidents. However, many countries, even developed, still don't supply reliable data on drowning; this situation doesn't allow researchers to see the whole picture. ILS (2007) presents population based death rates from drowning by collecting data from different countries. Brazil (3.5), Finland (3.4), and New Zealand (3.3) have the highest rates per 100,000 populations. In contrast, the lowest rates are in Iran (0.4), Malaysia (0.5), and Saint Lucia (0.7).

A drowning incident that results in death can occur at home within seconds, very silently, and in any kind of container of water, such as large pail or garden pond (Kenny & Martin, 2011). ILS (2011) expresses that the majority of fatal drowning incidents occur in natural open water sources. Ahrendt (2008) found that bathtubs and swimming pools have a lower percentage of death from drowning.

According to Ma et al. (2010), deaths by drowning are actually mostly preventable because as someone drowns, there are almost always witnesses around who generally have the chance to undertake a rescue attempt of the Primary Drowning Victim (PDV). Those attempts are quite risky, and may result in death of both "rescuer" and PDV from drowning, because ordinary people are not typically trained for rescue actions in water. A study using a simulated drowning incident found that more than half of fit adults couldn't throw a

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lifeline to a drowning person who was located 10 meters from the "rescuer," even with multiple attempts (Pearn & Franklin, 2009).

However, it is clear that rescuing someone drowning is a matter of skill and training. Untrained people may undertake such attempts in water without taking into consideration the risks because they act instinctively and altruistically, especially if the PDV is one's own child, sibling, other family member, or a friend where emotions may make such attempts even more risky.

Franklin and Pearn (2010) state that MDI is very common, and called these incidents in their study "the aquatic victim-instead-of-rescuer syndrome, (AVIR)." They reported that 86 "rescuers" died from drowning incidents in 15 years (1992–2007), as they attempted a rescue action in which PDVs were mostly children.

The aim of this study is to define and examine "rescuer" drowning and MDI in Turkey, and suggest preventative measures against MDIs.

2. Method

For this study, online archives related to drowning were searched via "www.google.com" and "www.yahoo.com" by using the keywords "drowning, drowned during rescue attempt, rescued and drowned." This study is based on reports from national news agencies, Turkish daily newspapers' websites, national online news websites, and regional/local news websites, which are dated between January 1, 2005 and December 31, 2008 in Turkey. Only incidents in which "rescuer/s" died from drowning were taken into consideration. The details of the news were examined to find out the personal details (gender, age, relation between drowned primary victim/s) of the "rescuer/s" and drowned primary victims. Furthermore, details were noted about the location and site of the drowning incident, including fresh and salt water environments. All activities in, around, under, or on water (including swimming, diving, fishing, having picnics, entry into the water, and sightseeing) were included.

Due to limited resources on deaths from drowning in Turkey, only online based news articles were used for data collection. Detailed records linking drowning incidents are not available even in developed countries because even developed countries still do not supply sufficient records on deaths from drowning incidents. Many other researchers (Barss, Subait, Ali, & Grivna, 2009; Baullinger, Quan, Bennett, Cummings, & Williams, 2001; Ghaffar, Hyder, & Bishai, 2001; Lunetta, Tiirikainen, Smith, Penttila, & Sajantila, 2006; Rainey & Runyan, 1992) have used newspaper reports as data sources on deaths from drowning incidents as well, and they claimed that data from newspaper reports describe drowning incidents in a timely and detailed way so as to illustrate modifiable risks and prevention messages. Ghaffar et al. (2001) found that data retrieved from newspaper reports may reflect a higher prevalence of injuries and deaths in comparison with police data, because newspapers may choose to report only severe incidents. However, newspapers and online based reports present drowning news in a more qualitative way with detailed circumstances compared to formal sources like police or ministry reports.

In this study, a PDV is accepted as a person who is in danger of death from drowning, and this danger might result in death, morbidity, or no morbidity. On the other hand, we call the drowning incident a "rescuer" drowning if the "rescuer" manages to rescue a PDV, but he/ she dies from drowning and the person who died during rescue attempt in those incidents as a drowned "rescuer." Lastly, we define MDI as a drowning incident in which both "rescuer" and PDV die from drowning.

In this study, a child is defined as a person below the age of 18 years (Peden et al., 2008).

3. Results

This study includes 88 cases in which 114 "rescuers" (*M*age = 26.2 years, age range: 9–75 years) died from drowning during their attempts to rescue a PDV; 42.1% of the "rescuers" were children and 72.0% of "rescuers" were males (Table 1).

This study includes 31 "rescuer" drowning incidents in which the PDV was rescued by "rescuer" but the "rescuer" died from drowning. In 29.8% of cases, "rescuers" and PDVs were friends or colleagues, 21.9% were siblings, and 21.0% were parent–child; 62.2% of "rescuer" drowning incidents occurred in summer, which is the hottest period of the year in Turkey; 27.2% of "rescuers" were successful in rescuing a PDV; 17.5% of incidents occurred in villages; and 59.6% occurred in towns (Table 2).

There were 107 PDVs involved in 88 drowning incidents, and 56.1% of the PDVs died from drowning. Seventy-five percent of drowned primary victims were children, and 65.0% of them were male (Table 3). There weren't any drowning incidents reported in which either "rescuers" or PDVs had drunk alcohol prior to drowning incident.

Table 1
Details of 114 drowned "rescuers" in 88 incidents.

		Gender				Age (years)			
		Female		Male		Min	Max	Mean	Std. Dev.
	Year	n	(%)	n	(%)				
Adult	2005	1	(20.0)	4	(80.0)	24	50	35.0	11.136
	2006	4	(23.5)	13	(76.5)	19	75	36.9	14.582
	2007	5	(20.8)	19	(79.2)	19	60	31.1	10.956
	2008	1	(5.0)	19	(95.0)	19	65	36.5	12.456
	Total	11	(16.6)	55	(83.4)	19	75	34.5	12.374
Child	2005	3	(42.9)	4	(57.1)	11	18	15.8	2.268
	2006	1	(25.0)	3	(75.0)	15	18	16.3	1.528
	2007	11	(57.9)	8	(42.1)	11	18	15.2	2.557
	2008	6	(33.3)	12	(66.7)	9	18	13.8	3.104
	Total	21	(43.7)	27	(56.3)	9	18	14.8	2.762
All	**Total**	**32**	**28.0**	**82**	**72.0**	**9**	**75**	**26.2**	**13.568**

Table 2
Information on 88 drowning incidents.

Period of the Incidents		n	(%)	Site of drowning	n	(%)
Year	2005	12	(10.5)	Lake/dam/water hole	41	(35.9)
	2006	21	(18.4)	River/creek/stream	37	(32.5)
	2007	43	(37.8)	Beach/Coast	20	(17.5)
	2008	38	(33.3)	Irrigation Canal	6	(5.3)
	Total	**114**	**(100.0)**	Pool	3	(2.6)
Season	Summer	71	(62.4)	Water hole	3	(2.6)
	Fall	22	(19.3)	Pool for fire fighting	2	(1.8)
	Winter	3	(2.6)	Water tank	1	(0.9)
	Spring	18	(15.7)	Flood	1	(0.9)
	Total	**114**	**(100.0)**	**Total**	**114**	**(100.0)**
Relationship between PDV –"rescuer"				**Purpose of being there**		
Friends/Colleagues		34	(29.9)	Swimming	38	(33.3)
Siblings		25	(22.0)	Having Picnic	36	(31.6)
Parent–child		24	(21.1)	Fishing	12	(10.5)
Brother/Sister in law		8	(7.1)	Washing carpet	9	(7.9)
Strangers		7	(6.2)	Sightseeing	8	(7.0)
Aunt/Uncle-Niece		5	(4.3)	At Residence	4	(3.4)
Cousins		5	(4.3)	Boat tour	2	(1.8)
Wife-Husband		3	(2.6)	Holiday	2	(1.8)
Grandparents-Grandchildren		2	(1.7)	Occupational	2	(1.8)
Fiancé		1	(0.8)	Travel	1	(0.9)
Total		**114**	**(100.0)**	**Total**	**114**	**(100.0)**
Success of "rescuers" in rescuing				**Place of Incident**		
Successful		31	(27.2)	Village	20	(17.5)
Unsuccessful		83	(72.8)	Town	68	(59.7)
				City	26	(22.8)
Total		**114**	**(100.0)**	**Total**	**114**	**(100.0)**