

Management of Road Accident Victims in Iran

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Abstract: In developing countries, due to the absence of proper management, lower than standard roads and highways and emergency supporting infrastructure, accidents have a high effect on human lives. Iran has a high rate of accident casualties and fatalities. In this paper, a light is shed on the process of victims' management and underlying factors for this high rate of human sufferings. Here, the roles of emergency rescue teams and dilemmas they are facing are briefly discussed. We also tried to highlight the process and ways to address these problems.

Keywords: EMS; RARO; Rescue Organization; Road Accident Victims; Rescue Process

1. Introduction

Road accidents are inevitable social problems. Death, disability and property damage are the consequences. Many efforts around the globe tried to minimize the number of incidents and severity of its impact on victims. As mentioned before, many lose their lives and several get severe injuries rather than financial impact on victims and society. Due to inefficient infrastructure in some of the developing countries, the effects are more devastating. The problem could be analyzed from different aspects, but our focus was on the process of rescuing victims in IR Iran.

As shown in Table 1, from 2006 to 2014, road accident casualties reached 2571364 and at the same time 202300 people lost their lives. Thirty one percent of deceased ones were young people aged 18 to 29 years. Fifty five percent of deaths were due to head injury. We are amongst the pioneers in accident related deaths and casualties in the world. In 2014, road and highway casualties and fatalities were 315719 and 17994, respectively.

Figure 1 shows that 50% of the deceased lost their lives in the scene (disaster zone). About 40% of them died in hospital and the rest during the transportation. Evidently, by proper management of victims at the scene and hospital, this rate could be reduced considerably.

Figure 2 shows the statistical rate of death amongst involved people. Of these fatalities, drivers, passengers, and pedestrians contribute to 41%, 34%, and 25%, respectively. Considering that drivers are a major cause in accidents occurring in developing countries, proper regulation and management of them could be very beneficial to reduce the burden.

An airplane crash hits the headline and gets more atten-

tion; in the past ten years, airplane crash fatalities were less than fatalities on the roads and highways accidents.

Unfortunately, the rate of trauma increases by industrialization and high rate of traffic accidents in developing countries. Since our focus was on Iran, it crucial to study the infrastructure here to have a better understanding of problems and ways to overcome this dilemma.

2. Rescue Organization

Many organizations are responsible to handle the rescue process. In addition to the emergency medical service (EMS) which is active all over the country, the red crescent relief and rescue organization (RARO) covers non-urban areas, while the fire and safety services deals with urban area accidents.

2.1. Rescue Process

The roof of the international Tehran airport collapsed due to a heavy snow in 1974. No emergency medical infrastructure was available at the time. Following this catastrophe, the emergency medical service (EMS) was established in Iran. EMS is administrated by a major Medical University in the province. Seventy percent of their staff has university education. In the event of an accident, by calling 115, the dispatch center, the nearest emergency operation center (EOC) to the accident is notified. EOC is responsible for all medical emergencies such as heart attack, strokes and all kinds of traumas (4). They may be equipped with motor, regular, airborne, or bus ambulances. First, EOC dispatches a forerunner

team from the nearest EOC center to the site and coordinates an airborne emergency if needed. The team performs the triage and assesses the injuries. At the same time, it notifies the RARO (red crescent relief and rescue organization) or the fire and safety Services as well. EOC is also responsible to inform the staff guidance and information at the university, the disaster director of the province, the EOC of the health ministry and the EOC of the internal affairs ministry if the disaster is of soaring scale. EOC also informs the staff guidance and information center, which is administrated by the same medical university. Therefore, this leads to coordination of admission to an appropriate hospital for victims.

If an accident happens in a non-urban area, RARO with 557 centers in 31 provinces dispatches a forerunner team to the site, which performs the triage and assesses injuries in parallel to EOC (5). Then, it requests required specialists and equipment. On the average, it takes a rescue team 11.49 minutes in urban areas and 14 minutes in rural areas to reach the accident scene (6). The global average is less than 8 and 15 minutes, respectively. Such delays in Iran cities are mainly attributed to traffic and lack of emergency lanes. In addition, uneducated public and inadequate emergency centers are responsible. The worldwide standard is one emergency center for every 60000 populace in urban areas (7), while in Iran there is a center for every 100000 people (6). The rural standard of a center at every 35 - 40 km is almost met in Iran (6).

After arrival of the rescue team, police is responsible for scene security. Too many meddling bystanders in Iran also diminish the efficiency and usefulness of the rescue team.

The victims are then transferred for admission to a hospital. Often it takes long. This lengthy time is mainly attributed to many factors including poor highway and road quality, road traffic and lack of proper public driving habits.

After admission of the wounded to a hospital, depending on the victim's condition, a five level triage is considered. For a level one patient the code is announced. Patients with chest, head, or abdominal trauma would be considered as a level two triage. Level three is for patients in need of repeated visits and paraclinic help. Patients who usually arrive by ambulance are visited by an emergency medicine physician or a general practitioner. Based on trauma and proficiency of the medical personnel, patients are managed in the hospital.

Fortunately, ATLS and PH-TLS training classes are offered in Iran by the POTA (Persian Orthopedic Traumatology Association) and Atieh hospital, licensed by the American college of surgeons. By further expansion of these courses in different parts of the country, more victims of accident related traumas could be saved. ATLS was founded in late 2011 and has so far trained 368 physicians. Thus far, 23 courses were offered in Tehran, Shiraz, Ahvaz and Tabriz. PH-TLS courses are more recent and in only three courses, 48 emergency staff, nurses and physicians trained since 2014.

Table 1. Annual Road Accident Statistics (2)

Year	Casualties	Fatalities
2006	274257	27755
2007	276762	27567
2008	245418	22918
2009	272877	23362
2010	295179	22974
2011	275093	20573
2012	297257	20068
2013	318802	19089
2014	315719	17994

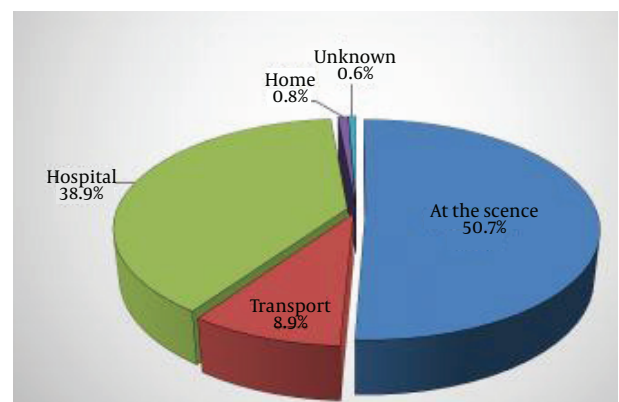


Figure 1. Residence of Death After Accident (3)

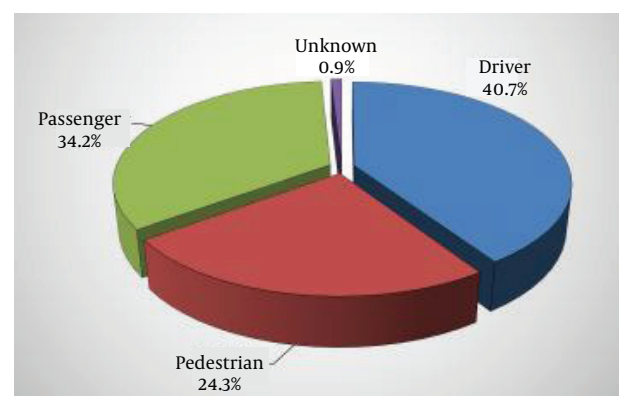


Figure 2. Statistics of Deceased in Accidents (3)

3. Concluding Remarks

In spite of three active major rescue organizations,

Iran has a high road related casualties. We have considerable facilities and instruments and numerous volunteers. An analysis is needed to assess the problem deeply. Probably, besides substandard roads and highways, it could be an insufficient collaboration and parallel activities of responsible organizations. Maybe, there are not enough airborne teams. Perhaps, we need a more rigorous and continuous rescuer training education. Nonetheless, non-stable personnel in each center that are not fully familiar with the area and a workforce with numerous daily financial problems could also be the cause. Finally, due to the high mortality rate of accident trauma victims in hospitals, reorganization, and management of traumatic patients is essential.

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