

**Conclusion:** Suggestions about mechanisms for data collection during earthquakes are presented. It is necessary to develop standardized data collection forms and data processing methods corresponding with risk management needs. Portions of the earthquake injury information may be applied to other disasters.

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### The Earthquake in Turkey in 1992: A Mortality Study

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**Objective:** To investigate the causes and circumstances of deaths in earthquakes (EQ).

**Methods:** A retrospective (case-control), randomized, structured interview study and medical record review methodology was employed to collect information from lay survivors, rescuers, health care providers, disaster managers, and medical records concerning care provided to and outcome of critically injured EQ casualties. An interdisciplinary team of researchers travelled to the site of the 13 March 1992 EQ (Richter Scale Magnitude [R] = 6.8) in Erzincan, Turkey (population 92,000).

**Results:** An analysis of mortality data revealed a crude death rate of 7.4/1,000 pop. (683 total deaths), an injury rate of 38/1,000 pop., and 3,500 total injuries. Of the total number of deaths, 99% occurred in the prehospital setting. Locations of the protracted deaths were at the scene of injury without any treatment (33%); during transport (44%); and after arrival at a hospital (23%). Of the protracted death cases, 93% had been trapped or pinned under rubble, 45% were observed to have breathing problems, and 36% had bleeding problems. After extrication, 71% experienced a deterioration in their general condition.

**Conclusions:** A significant number of deaths from earthquakes occur slowly, prior to resuscitative attempts. The possibility of preventing many protracted deaths justifies disaster preparedness with basic and advanced trauma life support components.

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### Disaster Reanimatology Potentials Revealed by Interviews of Survivors of Five Major Earthquakes

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**Objective:** To present a synthesis of results of resuscitation studies on five major earthquakes.

**Methods:** Retrospective interviews of survivors and providers, lay persons, rescuers, physicians, and administrators were conducted informally after the major earthquakes in Peru (1970) and Italy (1980), with structured interview methodology after the earthquakes in Armenia (1987), Costa Rica (1991), and Turkey (1992). Questions were designed to achieve cross-validation and information on slow dying processes, life-supporting first-aid (LSFA), advanced trauma life support (ATLS), and resuscitative surgery.

**Results:** No victims with severe trauma were extricated alive after 24 hours (h). The use of LSFA was not practiced except for control of external hemorrhage, because of lack of public education. The capability for initiation of ATLS existed as physicians reached some sites within 2 h, but was not practiced in the field because of lack of preparedness, an inadequate number of mobile ICU ambulances, and scarce equipment and supplies. An estimated 20%–50% of those ultimately “dead” appeared to have died slowly. The majority would have been candidates for resuscitation attempts, and 10–20% of these might have been saved with immediate LSFA plus ATLS <24 h.

**Recommendations:** All lay populations should receive LSFA training. Expansion of ATLS and hospital capabilities, in preparation for mass disasters, requires cost-effectiveness data.