

Landmine victims in Iran Kurdistan; demographic features and accident characteristics

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ABSTRACT

Objective: Iranian civilians living in border areas are still victims of un-neutralized war mines from the eight years war between Iraq and Iran. This cross-sectional study was aimed to determine demographic characteristics and features associated with the land mine injuries using data from a representative group of victims.

Methodology: Overall, 300 civilian mine victims in Kurdistan Province western Iran between 1991 to 2005 were randomly recruited. The documentary data for those who lost their lives was gathered from the archives of local police, Red Crescent and War-disabled (Janbazan) Organization. Other survived mine-injured victims were interviewed for data collection using a validated check list. SPSS was used for all analyses.

Results: Overall, 17.7% of victims (n=53) were killed immediately after explosion and 82.3% (n=247) were injured. Of those who survived, 40% (n=99) had an amputation surgery of lower limb in particular. Majority of victims were either farmers or shepherd. Amongst risk factors investigated, victims' job and age were significantly correlated with mine accidents in Kurdistan province after adjusting for other factors including gender, education level and socioeconomic status (Adjusted OR=2.1, 95% CI, 1.1-3.2, $p < 0.01$ and AOR=1.7, 95% CI, 1.1-2.5, $p=0.04$ respectively).

Conclusions: Young civilians living in border areas between Iran and Iraq with certain jobs are still affected by un-neutralized war mines despite the valuable mine clearance activities in the area. Concerted efforts are required to avoid and minimize the adverse effects of mine explosions in border areas in west of the country and in Kurdistan in particular.

KEY WORDS: Accident characteristics, Civilian, Landmine.

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INTRODUCTION

Mines are responsible for almost 90 percent of victims of explosive weapons, affecting not only soldiers but also innocent civilian people.¹ Iran is estimated to be the second country in the world distressed by not neutralized planted mines. Majority of victims are civilians and the current actual statistics are usually higher than the formal previous estimates.²

Two decades after the war ended, there are still mine explosion hazards in border areas between Iran and Iraq. It is estimated that 12-16 million landmines had been implanted in over 42,000 sq. kilometers of western and southern border areas

of Khuzestan, Ilam, Kermanshah, West Azerbaijan and Kurdistan.³ According to the estimates by the Iranian Mine Center Clearance, an average three people are affected by non-neutralized mines in these areas daily directly or indirectly and mine accident lead to the losses and damages to residents of these localities.⁴ Until the clearance process is completed, death and disability particularly in children in the contaminated areas, will remain a potential threat and a serious challenge against the development.⁵

Kurdistan is a frontier and mine affected province where individuals, families, environment, tourism, agriculture are seriously affected. In a study on amputation in five west provinces of Iran during 1998-2003, one third victim of mines in Iran pertained to Kurdistan province.⁶

Recognizing the epidemiology and etiology of death and injuries from mine accidents and identifying hazardous situations are important ways to decrease life losses not only in Iran but also across all affected areas worldwide. The present cross-sectional study aimed to determine demographic characteristics and features associated with the mine incidents in a representative group of civilian victims in Kurdistan province in western Iran.

METHODOLOGY

It was a cross-sectional study. Three hundred civilian mine victims in Kurdistan province western Iran during 1991 to 2005 were included through a cluster randomized sampling method. The data for those who lost their lives was gathered from the archives of local police, Red Crescent and War-disabled Organization. Other surviving mine-injured victims were interviewed for data collection using a validated check list. Parametric and nonparametric statistical tests including independent sample t test and Pearson Chi squared were used and a p value of equal or less than 0.05 was considered statistical significant. A stepwise backward logistic regression analysis was conducted to determine adjusted odds ratios associated with mine accidents. SPSS was used for all analyses.

Exclusion criteria included those who were hit by mines outside the province; military personnel and those injured with other explosive weapons.

Ethical issues including individual's written consent to participate in the study, their privacy and identity, formal permissions and confidentiality of personal data were considered. The study proposal was approved by the Kurdistan University of Medical Sciences Ethical Committee.

RESULTS

The mean age of victims' was 28.6 ± 20.4 years. Overall, 17.7% of victims (n=53) had been killed immediately after explosion and 82.3% (n=247) were injured (Table-I). Of those who survived, 40% (n=99) had an amputation surgery of lower limb in particular, 13% (n=32) became blind and 10% (n=25) became deaf. The mean interval to onset of the disaster was 2.1 hours and mean hospitalization period was 41 days. Number of victims reached the peak in 1996 with an incidence of 13% (n=40). Majority of victims were either farmers, shepherd or children (Table-II).

Overall, 35.7% of the victims reached the hospital within one hour and 96% had been transferred to medical centers in less than five hours. Majority

Table-I: Frequency of demographic characteristics of land mine victims.

<i>Demographic characteristics</i>	<i>n (%)</i>
<i>Age group (years)*</i>	
<15	37(12.3)
16-25	117(39)
26-45	97(33.6)
46-65	43(15.1)
>65	
<i>Gender</i>	
Male	287(95.7)
Female	13(4.3)
<i>Education status</i>	
Illiterate or Primary	177(59.0)
Guidance	65(21.7)
High school	45(15.0)
Collegiate	13(4.3)
<i>Occupational status**</i>	
Rancher	27(9)
Farmer	23(7.7)
Worker	45(15)
Student	66(22)
Housewife	6(2.0)
Employee	12(4.0)
unemployed	121(40.3)
<i>Incident occurring in cities</i>	
Sanandaj	52(17.3)
Saqez	44(14.6)
Marivan	58(19.3)
Baneh	114(38.0)
Kamyaran	14(4.6)
Divandareh	10(3.2)
Qorveh	0(0)
Bijar	0(0)

* Adjusted OR=2.1, 95% CI, 1.1-3.2, p<0.01

**AOR=1.7, 95% CI, 1.1-2.5, p=0.04

Table-II: Characteristics of mine victims.

Characteristic	n (%)
Activities during accident	
Ranch	83(27.7)
Husbandry	20(6.7)
Play & work	103(34.3)
Seeking food & herb	59(18.7)
Journey & administrative work	19(4.3)
Season of incident	
Spring	171(57.0)
Summer	62(20.7)
Autumn	52(17.3)
Winter	12(5.0)
Injured transport vehicles	
Van	133(51.0)
Minibus	26(10.0)
Tractor	20(7.6)
Animals	6(2.3)
Ambulance	13(5.0)
Other	63(24.1)
Primary aid workers	
Him/herself	10(3.3)
Family members	110(36.7)
Military personnel	25(8.3)
Acquaintance	141(47.0)
Unknown	14(4.7)
Awareness of warning signs	
Yes	10(2.6)
No	290(97.4)
Accident location	
Mountain or Farmland	53(17.6)
Border	29(7.9)
Military based	186(63.0)
Roads	26(8.7)
Home	5(1.7)
Accident setting	
Village	240(80.0)
City	60(20.0)

of victims were from Baneh city originally (38%). Amongst risk factors investigated, victims' job and age were significantly correlated with mine accidents in Kurdistan province after adjusting for other factors including gender, education level and socioeconomic status (Adjusted OR=2.1, 95% CI, 1.1-3.2, $p<0.01$ and AOR=1.7, 95% CI, 1.1-2.5, $p=0.04$ respectively).

DISCUSSION

The present study was representative in terms of sample size and participation rate in which almost all surviving mine victims were available and ac-

cepted to be included in this study. The study setting was also a strong point for representativeness as the Kurdistan province is one of the five provinces in Iran involving mine accidents with a long geographical border with Iraq. Mean age of victims at the time of the accident in the present study was slightly higher compared to the recent foreign studies. Overall, 12.3% of samples were under 16 years and 39% were aged between 16 to 25 years. A recent similar study in Chechen (Russia) reported that one in four mine victims (25%) were under 18 years.⁷ The corresponding rates were 40% in Eritrea (Africa), and 45% in Afghanistan.^{8,9} In terms of gender, 95.7% were men. In similar studies, male-female sex ratio was varied between 3 and 10.¹⁰⁻¹² However, almost all studies across the world have reported a sex ratio of more than one for mine victims as men and boys, but not women and girls who usually do not work outside the house due to socio cultural limitations. In the present study, 59% of samples were illiterate or had only primary education level which is consistent with a recent report from Iran where almost half of landmine victims (48%) also had low literacy.⁶

In terms of victims' occupational status, rural adolescent schoolchildren that normally are going to farms and graze animals were more vulnerable risk group (22%) followed by shepherds (15%). These were different from a previous report in which more than 30% of victims were shepherds.⁶ About 4.3% of participants preferred not to notify their job during interview.

There was also a seasonal pattern since more than half of landmine accidents (57%) were reported during spring season. This could be due to search for spring plants like mushrooms, rhubarb and acanthus in the mountains and plains by victims. On the other hand, minimum accidents were observed in winters possibly due to freezing weather since nobody could get out from home.

Only 4.3% of victims were transferred to hospital by means of ambulances equipped by necessary drugs and medical staff. The average time from incident to start of treatment was 2.1 hours with a minimum of 0.5 hour and a maximum of 10 hours. Majority of primary aid workers at the time of accidents were family members and acquaintances. This indicates the necessity of implementing the low-cost and high technology training systems for people living in high risk areas before entering the hospital which will improve pre-hospital care and reduce the mortality rate.¹³ In fact, establishing such training courses using the existing health care fa-

cilities in the hazardous rural areas could provide emergency care for landmine victims. By stabilizing the hemodynamic status of people injured will minimizes casualties during transportation.¹⁴ According to the latest estimates, between 30-50% of the injured individuals died in the early hours of min explosions due to bleeding and failure to reach the hospital immediately after explosions.¹

In terms of warning information, only 2.6% of victims have reported that they were aware of signs emphasizing forbidden mine-infected areas. This indicates that related governmental organizations should install the warning signs besides concentrating on public education.

Overall, 80% of injuries were reported from rural areas and villages with low socioeconomic status. Although organizations such as the Janbazan Foundation are financially and spiritually supporting landmine victims, it must be acknowledged that physical and psychological disabilities force disabled victims to accept low wage jobs as generally they are not well educated.

Young civilians living in villages and border areas between Iran and Iraq with certain jobs are still affected by un-neutralized war mines despite the commendable efforts made by the government. Complete clearance of mine-contaminated lands and reducing physical symptoms, social and psychological consequences is extremely important. Hence concerted efforts are required to minimize the adverse effects of mine explosions in border areas.

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