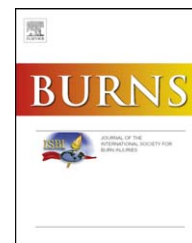


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# A prospective population-based study of suicidal behavior by burns in the province of Ilam, Iran

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## ABSTRACT

**Objective:** The aim of this study was to examine epidemiologic characteristics of suicidal behavior by burns requiring hospitalization in the province of Ilam, Iran.

**Methods:** A prospective population-based study of all suicidal behaviors by burns requiring hospitalization was conducted in the province of Ilam, Iran, from March 21, 2005 to March 20, 2006. Data were obtained from patients, family members, and/or significant others through interviews during the course of hospitalization.

**Results:** A total of 51 patients with suicidal behavior by burns requiring hospitalization were identified during the study period, representing an overall incidence rate of 12.5 per 100,000 person-years (P-Y) (95% confidence interval [CI]: 9.1–16.0 per 100,000 P-Y). Women had a higher rate of suicidal behavior by burns than men (18.0 vs. 7.2 per 100,000 P-Y) ( $P < 0.001$ ). The age-specific rate of suicidal behavior by burns peaked at age group 20–29 years (19.3 per 100,000 P-Y). The rate of suicidal behavior by burns was slightly higher among married persons than single persons, although not statistically significant (13.5 vs. 9.8 per 100,000 P-Y) ( $P = 0.25$ ). The rate of suicidal behavior by burns among the rural population was significantly higher than the urban population (17.9 vs. 9.3 per 100,000 P-Y) ( $P = 0.02$ ). The most frequent precipitating factor for suicidal behavior was marital conflicts.

**Conclusions:** The high rate of suicidal behavior by burns among young, married women in Ilam is an alarming social tragedy. Despite substantial efforts toward improving health and human rights, persistent conditions allow violence against women in Iran and these women continue to turn to the desperate remedy of self-burning. Findings of this study highlight the need for the implementation of a well-organized approach to reduce the incidence of suicide by burns.

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## 1. Introduction

Suicide is a tragic and perplexing global challenge which has preoccupied professionals from a variety of disciplines for many years. It is also an important and preventable public health problem and a considerable drain on resources in both primary and secondary health care settings. Individuals commit suicide for multiple complex and intangible reasons, but society is often not willing to talk openly about this issue.

Suicide by burns is perhaps the most drastic and violent method of suicide known today. The issue of suicidal behavior by burns has been a topic of great interest in Iran for more than a decade [1-12]. All previous studies on suicidal behavior by burns in Iran showed that women are the primary victims of suicide by burns (>70% of suicide burn patients) [1-14]. Majority of these patients are young with an average age of less than 29 years [1-7,9-13]. It has been suggested that suicide by burns was higher in rural areas and in provinces that border the country, particularly those that were involved more intensively in postwar problems [9]. A few studies suggested that people of Kurdish ethnicity were more likely to engage in suicide by burns [5,9,12]. Some studies identified unemployment as a risk factor for suicide by burns [5,7,9,11]. A number of studies reported that marital conflict with spouse and conflict with other members of the family was associated with increased risk of suicide by burns [5,7-9,11-13]. Although there has been a considerable amount of research and literature on suicide by burns in Iran, there is still an urgent need for a better understanding of suicide among vulnerable, culturally different, and diverse populations in Iran. Considering that majority of previous studies used a retrospective chart auditing (or existing administrative databases) method [2,9,10,12,14], there may have been a potential source of bias in their findings. This is because both patients and health care providers may not voluntarily discuss and/or document factors associated with and etiologies behind the events. It is important to note that Iran is a diverse country (divided into 30 provinces) consisting of people of many ethnic backgrounds. The population ethnic diversity may play a role in epidemiologic features/patterns of suicide by burns in different provinces in Iran. This study attempts to provide accurate information on suicide by burns and its etiologies in a border province (Ilam province) with a high proportion of people of Kurdish ethnicity and add to the existing literature. It should be noted that identifying the chain of causal and triggering factors of suicide by burns, which are highly individual, is perhaps one of the most challenging problems facing professionals. This will hopefully yield new directions for research, and assist health care professionals, as well as policy makers, in the development of more effective strategies and intervention programs.

The authors initiated a collaborative effort to study the epidemiology of suicidal behaviors by burns through a prospective national multicenter study in various provinces across Iran [7,11]. As a part of the above-mentioned research initiative, this study was carried out to determine the magnitude of the problem, as well as to identify socio-epidemiological features, associated factors, and potential causes of suicide by burns in the province of Ilam, Iran. The authors intend to use the key findings of these studies to develop an effective preventive program(s) directed toward

tragically the most vulnerable groups in the population. The key findings of this study along with appropriate recommendations/priorities for interventions will also be submitted to the officials/decision makers at the provincial and national levels to reduce the incidence of suicide by burns.

## 2. Methods

### 2.1. Patients and procedures

The province of Ilam (also called *Elam* in Kurdish) is one of the 30 provinces of Iran, located in southwest of the country, bordering Iraq and covering an area of approximately 20,000 km<sup>2</sup>. The population of the province is approximately 545,787 (0.8% of the national population), with 25% of the population being younger than 15 years (Statistical Center of Iran, 2008). The population of Ilam is predominantly Kurdish. During the Iran-Iraq war, the province of Ilam took a heavy pounding, and Iraq's intense bombings left no economic infrastructure for the province. Ilam has thus been one of Iran's more undeveloped provinces with an unemployment rate of approximately 20% (Statistical Center of Iran, 2008).

The study is a prospective population-based cohort study conducted from March 21, 2006 to March 20, 2007 at Taleghani Hospital located in the city of Ilam (the capital of the province of Ilam), the only referral burn center for major burn injuries in the province. Due to its designation as the tertiary burn referral center for the province, all significant burn cases in the province of Ilam are referred to this burn center. Thus, the rosters of burn cases in this center can be used to estimate the total number of major burn injuries occurring in the province.

All patients who were hospitalized for burn injuries were interviewed by a nurse practitioner among the burn center staff during the hospitalization period. If a patient was in critical clinical condition (unable to communicate), or died during the first 24 h of admission, the history and relevant information was obtained from a "significant other" (a parent, relative, or friend) who knew the subject well. Training sessions were held by one of the authors (A.R.L.), with the nursing staff explaining the purpose of the study and how to conduct the interviews. Regular visits were scheduled with the nurse practitioner (by A.R.L.) to address possible concerns and/or challenges she may have had during the course of the study. It should be noted that all suicide by burns acts included in this study were intentional.

All patient testimonials were collected using a standardized questionnaire after obtaining informed consent. The questionnaire included questions pertaining to age, sex, marital status, place of residence (rural area was defined as a community with a population less than 5000), level of education, employment status, precipitating factors, psychiatric history, method of self-burning, total body surface area (TBSA) burned, as well as outcome. In this study, any psychiatric diagnoses documented during a psychiatric consultation were also obtained. If suicidal behavior was suspected by the family or the burn center's personnel, but there was denial by the patient, the case was not included in the study. It is important to note that staff suspicion of suicidal behavior was aroused when a patient's story did not match the

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