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Intentional burns in Nepal: A comparative study

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ARTICLE INFO

Article history:

Accepted 12 January 2015

Keywords:

Burns
 Intentional
 Epidemiology
 Risk factors
 Comparator study

ABSTRACT

Aims: Intentional burns injuries are associated with high mortality rates, and for survivors, high levels of physical and psychological morbidity. This study provides a comprehensive assessment of intentional burn admissions to the adult Burns Unit at Bir Hospital, Kathmandu, Nepal, during the period 2002–2013.

Methods: A secondary data analysis of de-identified data of patients hospitalized at Bir Hospital, Kathmandu, with a burn during the period of 1 January 2002 to 31 August 2013. Socio-demographic, injury and psychosocial factors of patients with intentional and unintentional burns are described and compared. Chi-square tests, Fisher's exact test and Wilcoxon rank sum tests were used to determine statistical significance.

Results: There were a total of 1148 burn admissions of which 329 (29%) were for intentional burn, 293 (26%) were self-inflicted and 36 (3%) were due to assault. Mortality rates for intentional burns were approximately three times those for unintentional burns (60 vs. 22%). When compared to unintentional burns, patients with intentional burns were more likely to be female (79 vs. 48%), married (84 vs. 67%), younger (25 vs. 30 years), have more extensive burns (total body surface area, %: 55 vs. 25) and higher mortality (60 vs. 22%). Intentional burns were more likely to occur at home (95 vs. 67%), be caused by fire (96 vs. 77%), and kerosene was the most common accelerant (91 vs. 31%). A primary psychosocial risk factor was identified in the majority of intentional burn cases, with 60% experiencing adjustment problems/interpersonal conflict and 32% with evidence of a pre-existing psychological condition. A record of alcohol/substance abuse related to the patient or other was associated with a greater proportion of intentional burns when compared with unintentional burns (17 vs. 4%).

Conclusions: The majority of intentional burn patients were female. Almost all intentional burns occurred in the home and were caused by fire, with kerosene the most common accelerant used. Underlying psychosocial risk factors were identified in most cases. Intentional burns resulted in severe burns with high mortality. Intentional burns are not only a serious medical issue; they represent significant public health and gender issues in Nepal.

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<http://dx.doi.org/10.1016/j.burns.2015.01.006>

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1. Introduction

Injuries, violence and consequent disabilities are a major public health problem in Nepal [1]. An injury survey by the Nepal Health Research Council (2009) [1] using emergency department data from selected tertiary health facilities estimated that intentional injuries accounted for 23% of all injuries. This report also identified the high prevalence of morbidity related to interpersonal violence in Nepal and the high prevalence of self-inflicted injury among females. There has been a lack of reliable and good quality national or regional injury data in Nepal that has hindered injury surveillance and recognition of injuries as a growing problem [2]. A recent systematic review of burn in South Asia identified the lack of peer-reviewed burn data from Nepal [3].

Patients with intentional burns comprise a patient population with unique clinical presentations [4,5], usually sustaining more severe burns with worse outcomes, including high mortality rates [6,7]. The burden of intentional burn is not equally distributed across the globe [8] with higher incidences reported in low- and middle-income countries (LMIC) [8–12] compared with high-income countries where such burns represent only 1–9% of burn admissions [6,13,14]. Self-inflicted burns include a spectrum of burns from self-harm with minimal injury to suicide by self-immolation [9–12,15–17], and represent major medical and social concerns globally [18]. Self-inflicted burns are often associated with pre-existing psychiatric illness, specific racial and cultural backgrounds, gender, lower socio-economic status and inadequate access to mental health care [12,18–23]; and patients have a poor prognosis [7,14]. Pre-existing drug and or alcohol abuse, low socio-economic status, and a spectrum of burn severity [4,24,25] have been associated with assault burns. While past studies show that flame is the main mechanism of assault burns and petrol and flammable fluids the most frequently used accelerants [24,26], assault by hot liquids [27] and chemicals have been reported [4,24,25,28,29].

Nepal is a country in South Asia with diverse geography and culture, with 126 caste/ethnic groups of which Chhetri and Brahman-Hill are the largest caste/ethnic groups representing 16.6 and 12.2% of the population, respectively [30]. It is one of the poorest countries in the world [31] with a population of approximately 27 million people of which 42% of the population is younger than 18 years of age, 48% are male, with an overall literacy rate (5 years and older) of 66% reported in 2011, with male literacy of 75% compared with 57% for females [28]. While the majority (83%) of the population lives in rural areas, Nepal is urbanizing rapidly. During the period 1999–2006, the country experienced civil war that resulted in internal displacement of many people from their rural homes to urban areas. Sporadic terrorist incidents and politically motivated violence in Nepal [32] have resulted in burns.

Kathmandu Valley is the most developed and populated area in Nepal and has a population of 2.5 million [30]. Bir Hospital, based in Kathmandu, is the oldest medical institution in Nepal and has a 9-bed burns unit dedicated to treatment and management of adult burns patients. There are nine other hospitals in Kathmandu with capacity to treat burn patients; however, Bir Hospital is the only tertiary referral

center for burns in Nepal which provides a free service and many of the patients admitted to the Bir Hospital are from very low socio-demographic backgrounds. While the cost of hospitalization and some treatments are free, other basic costs of treatment must be paid for by the patient and their family. A volunteer non-government organization in the hospital (Christina Dispensary) provides limited amounts of medicines and the Burns Unit receives additional support from individuals, non-government organizations and international non-government organizations. Burns Violence Survivors-Nepal [33], a not-for-profit non-government organization, has been involved in providing counseling, nutrition and other allied health support services to patients in the Burns Unit at Bir Hospital, and has provided burn and violence prevention education since 2011 to the general public and schools in Kathmandu Valley.

Nepal is a poor country that has limited burn specialist facilities and currently there is an absence of Nepal burn data presented in the published literature. Reporting of Nepal data is important on many levels: to highlight the medical and public health issues of intentional burns in this country, to inform government and local health care providers and to direct preventive burn strategies. This study is a result of a collaborative effort between the Burns Unit at Bir Hospital, Burns Violence Survivors-Nepal and the Burn Injury Research Unit, University of Western Australia. This study aims, firstly, to compare socio-demographic, injury and psychosocial characteristics of patients with intentional (combined self-harm and assault) with unintentional burns hospitalized at Bir Hospital, Kathmandu, during the period 2002–2013; and, secondly, to compare the socio-demographic, injury and psychosocial characteristics of patients with self-inflicted burns to those with assault burns.

2. Methods

Secondary data analyses of de-identified data of patients hospitalized at Bir Hospital, Kathmandu with a burn during the period of 1 January 2002 to 31 August 2013 were conducted. Permission to analyze the data was granted by the Nepal Health Research Council. Patient information used for this study included age, gender, caste [34], marital status, education level (illiterate, basic to class 8, class 9–12, tertiary level), economic status (capacity to pay for treatment: none, some, sufficient), employment status, administrative region (Far Western, Mid-Western, Western, Central, Eastern), urban–rural residence, geographic region (hills/mountains, Terai/plains), intention of burn (deliberate self-harm, assault, unintentional), place of burn occurrence, total body surface area burned percent (%TBSA), mortality, multiple anatomical sites burned (yes/no), alcohol and/or substance abuse related to injury (patient or other), cause of burn, fuel/agent associated with flame/fire burn, and days from initial burn to hospitalization at Bir Hospital. Variables that captured the presence of a psychological condition, adjustment problems or interpersonal conflict (IPC) (assessed by qualified psychologists, NPS and BBL) and family support of the patient (yes/no) during hospitalization were available for patients with intentional burns.

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