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# Burn patients during the Summer Solstice festivities: A retrospective analysis in a hospital burn unit from 2005 to 2015

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## ARTICLE INFO

### Article history:

Accepted 8 April 2016

### Keywords:

San Juan  
Beach  
Bonfire  
Burn patients  
Meteorology

## ABSTRACT

**Aim:** San Juan (Summer Solstice) is an annual festival celebrated in many parts of Spain on June 24 by lighting bonfires on beaches and in open air. The aim of this study is to analyse the patient profile of those sustaining burns the night before San Juan.

**Material and methods:** The data of 179 patients who sustained burns on June 23 and 24 between 2005 and 2015 were collected retrospectively.

**Results:** The average age of the patients involved in this study was 27.33 years, with males constituting a higher proportion. Hands were the most affected area of the body, and the average burn area was 3.39%. No statistically significant relationship was found between the tidal times and the number of patients with burns, although the latter increased at low tide ( $p = 0.177$ ).

**Conclusions:** The results of this study can guide prevention campaigns during these festivities in the future.

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## 1. Introduction

San Juan is an annual festival celebrated in Spain on June 24. This festival is associated with the Summer Solstice and other phenomena related to Celtic mythology. The onset of summer is celebrated with various rites usually associated with fire. During these celebrations, bonfires are lit on beaches and other open-air locations during the night of June 23 to 24. The tradition consists of jumping over the bonfires, as this is believed to bring good luck and protection. The incidence of burns is higher during this festival than the rest of the year. According to the literature, the relationship between the San Juan festivities and the increase in the number of patients in

burn units has not been explored. The aim of this study is to analyse the progress of patients admitted to our burn unit in relation to the San Juan festival from 2005 to 2015.

## 2. Materials and methods

Data of patients admitted to the burn unit and outpatient department of the University Hospital Complex of A Coruña, Spain, on June 23 and 24 during 2005–2015 were gathered retrospectively. Data collection was performed by reviewing the medical records of patients discharged from the burn unit 3 months after the San Juan celebrations and those who attended the outpatient department of the burn unit 10 days

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<http://dx.doi.org/10.1016/j.burns.2016.04.007>

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after the celebration. Therefore, patients who received attention in a burn unit were included in this study. However, we did not include patients who visited primary health-care units (i.e., who did not need attention in a burn unit). Patients who had sustained burns in their homes or elsewhere unrelated to the San Juan festivities were excluded. The variables registered were age, gender, time and date of the burn, its depth, total body surface area (TBSA) affected by the burn, burn location, date and type of admission (emergency or scheduled), date and type of surgery (emergency or scheduled), whether or not June 24 was a working day, minimum temperature ( $^{\circ}\text{C}$ ) on that day, wind speed (km/h) and rainfall ( $\text{l}/\text{m}^2$ ) between 18.00 on June 23 and 7.00 on June 24, and whether the tide was high or low during the night of June 23–24. Data analysis was performed using Microsoft Excel<sup>®</sup> (version 14.5.3) and SPSS<sup>®</sup> (version 21.0).

### 3. Results

The number of burn patients evaluated in our hospital increases each year during the night of San Juan celebrations. This is confirmed by the data collected from 2005 to 2015 on the 23rd and 24th of each month. The average number of patients admitted on June 23rd and 24th (31) was more than twice that the mean of patients admitted on the same days in all months of the period studied (12) (Fig. 1). However, when we compare the average number of patients attending our outpatient clinic 10 days after the 24th of each month from 2005 to 2015, no clear increase in activity was observed during the month of June (66.73 patients) with respect to the average total every year (53.73 patients). This is because former patients being monitored are scheduled appointments in the weeks before San Juan so that health-care workers can tend to the several burn patients from the festival the days following June 24th.

Data obtained from patients who had suffered burns during June 23 and 24 from 2005 to 2015 were analysed. A total of 179 patients were included in this study, including those who attended the outpatient unit. Of them, the ratio of men to women was 2.73:1 (73.18% male). Among the patients admitted, the number of males suffering burns during the San Juan celebrations (81.13%) is higher than the total number of males admitted overall from 2005 to 2015 (60.89%). The average age of the patients was 27.33 years (range 2.64–79.27). The maximum number of burn patients was noted between midnight and 2 am on June 24 (Table 1). Data were gathered based on admission time, emergency and scheduled surgery

**Table 1 – Time bands during which burns were sustained.**

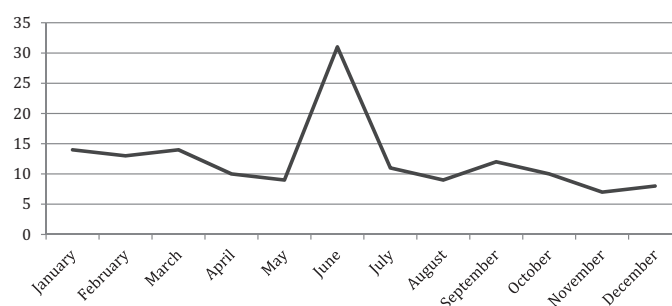
Time	N (173)	%
Before midnight	29	18.73
From midnight to 2 am	73	42.20
From 2 am to 4 am	37	21.39
After 4 am	34	19.65

carried out, and the period of time before surgical interventions (Table 2). The mean TBSA was 3.39% (0.01–30%), with peaks during 2009 and 2011 (Fig. 2). Burns occurred most frequently in the upper limbs, that is, hands (Table 3). Upon analysing these numbers by age, only 20% of patients below 6 years of age presented with burns in the hand, whereas 60% presented with burns in their feet. However, in patients above 6 years of age, the hands were the most affected (40.8%, Table 4). The depth of wounds also varied, although superficial skin burns were most frequently noted (Table 5). In superficial skin burns, initial management involves washing with physiological saline solution and chlorhexidine soap and aseptic debridement of blisters. Afterwards, a dressing impregnated with silver sulphadiazine (1%) cream is applied. This procedure is repeated every 24 h until the burns heal. In some cases, daily debridement of the burn is necessary, whereby new slough and flaky skin are removed.

The total number of patients admitted was 53, with the maximum number (11) being registered in 2007 (Fig. 3). Fifty nine percent of admissions were emergency admissions. The average period of hospitalisation was 13.75 days (range 1–108 days). The number of surgical interventions per patient was 1.34, the majority of these being scheduled burn debridement and skin grafts. The mean time from the burn incident until scheduled intervention was estimated to be 16.81 days (range 3–47 days). In only three patients, emergency escharotomies were necessary.

No death was reported in patients evaluated in the hospital. However, in 2011, a 22-year-old male died when he jumped over a bonfire in the village square, and he was therefore not evaluated in the hospital.

We analysed the patients who sustained burns between 18.00 on June 23 and 7.00 on June 24. The average number of patients with burns was 14.5 (median 15) during the years when June 24 was not a holiday and 17.4 (median 14) when it was a holiday. No statistically significant difference was noted between these two values (Mann–Whitney;  $p = 0.931$ ).



**Fig. 1 – Total number of patients admitted on the 23rd and 24th of each month during the years 2005–2015.**

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