

# Profile of Burn Cases at a Tertiary Care Hospital in Goa, India

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## Abstract

**Introduction:** Burn injury is an important public health problem and is largely preventable. Burn injuries could lead to lifelong disability and disfigurement. Most of these cases are reported from low- and middle-income countries. However, there is insufficient data available about the burden of burn injuries. Hence, this study was undertaken at a Tertiary Care Hospital in Goa, India.

**Materials and Methods:** The medical records of burns patients admitted to the burns unit of Surgery Department from January 2016 to December 2016 were reviewed.

**Results:** There were 170 patients with burn injuries. Prevalence of suicidal burns was 12.9% and of accidental burns was 87.1%. Major proportion of total burn injuries were accidental in nature occurring in the age group of 26-50 years (46.5%), and were in females (67.1%). Nearly 77.6% of burn patients were from rural areas. Major proportion of accidental burns were caused by flame namely stove burst followed by liquid petroleum gas leakage. Total body surface area involved was higher in suicidal burns (86.4%) as compared to accidental burn injury. Major proportion of accidental burns patients (54.1%) survived and were discharged from hospital, whereas the major proportion of suicidal burns patients (86.4%) died in the hospital.

**Conclusion:** Burns continue to be a major public health problem. To prevent burn injuries, it is necessary to develop a broad-based prevention strategy including burn control measures and strengthened burn care, as also better information and surveillance systems, and more investment in research and training.

**Key words:** Burns, Prevalence, Types of burns

## INTRODUCTION

Burns are a global public health crisis, accounting for an estimated 265,000 deaths annually.<sup>1</sup> In India, over 1 million people are moderately or severely burnt every year.<sup>1</sup> It is estimated that fire-related burns account for 10 million disability-adjusted life years lost globally each year.<sup>2</sup> Most of the burn injuries are seen in low- and middle-income countries. Burns are a leading cause of disability and disfigurement. Burn is a unique, but common mode of suicide as well as homicide worldwide.<sup>3</sup>

Burn injuries rank very high as most severe types of injuries suffered by the human body and attributing high morbidity and mortality among victims.<sup>3</sup> They can be inflicted by heat, scalds, open fire, electricity, friction or contact with chemical substances, radiations, etc. Problems associated with burns are multi-faceted, comprising death, disabilities, disfigurement, psychosocial problems, stigma, etc.

Burn injuries are more common in developing countries like India due to various socio-cultural factors, namely, illiteracy, poor living and housing conditions, poverty, poor substandard electrical wiring, malpractices like dowry. There is lack of awareness and ignorance regarding burn injuries coupled with difficulty in accessing health-care services.<sup>4</sup>

The data on the burden of the burn injuries is either inaccurate or inadequate, so the present study was undertaken to find out the prevalence of accidental and suicidal burns at a Tertiary Care Hospital in Goa, India.

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## Aims and Objectives

1. To study the prevalence of accidental and suicidal burn patients at Tertiary Care Hospital in Goa.
2. To study the demographic and clinical profile and treatment outcome of burn patients at Tertiary Care Hospital in Goa.

## MATERIALS AND METHODS

- Study design: Record based study.
- Study setting: Goa Medical College.
- Study period: January 2016-December 2016.
- Study population: The medical records of patient aged 15 years and above admitted in the Burn unit of Surgery Department of a tertiary care Hospital in Goa, from January 2016 to December 2016.

### Inclusion Criteria

Patients with burns aged 15 years and above admitted to the burn unit of Surgery Department from January 2016 to December 2016 were included in the study.

### Exclusion Criteria

Patients with burns <15 years of age were excluded from the study.

### Data Collection

Data of patients with burns admitted to the burn unit of surgery departments such as information age, sex, place of residence, time of occurrence, mode of injury, Total body surface area (TBSA) involved, and other aspects were obtained from medical records.

### Ethical Consideration

Ethical clearance was obtained by the Institute ethical committee.

### Data Analysis

Data were analyzed using SPSS Version 22.<sup>5</sup>

### Definitions

#### Burn injury

A burn injury was diagnosed as defined by WHO's ICD-10 classification system (T20-32).<sup>6</sup> These included smoke, fire, and flames (X00-09), contact with hot substances (X10-19), electric current (W85-87) and corrosive substances (X46-49). This also includes scalds and burns due to electric heating appliances, flame, chemical burns, and other thermal burns.

#### TBSA

TBSA was estimated by the "rule of nines."<sup>7</sup>

## OBSERVATIONS AND RESULTS

A total of 170 burn patients were included in the study. The prevalence of accidental burns was 87.1%, and that of suicidal burns was 12.9%. There were no homicidal cases reported in the records. It can be shown in Table 1, accidental cases of burns were highest (78.5%) among the age group of 26-50 years, as also suicidal burns 21.5% in the same age group. It was observed that major proportion of burn patients were females (78.5%) in both accidental and suicidal burns. Major proportion of burn patients (88%) were Hindus by religion. Major proportion of burn patients were married individuals as compared to unmarried, widowed, divorced, or separated. Major proportion of accidental burns patients were unemployed (90.2%), whereas the major proportion of suicidal burns patients were employed (16.7%). Major proportion of both accidental (87.1%) and suicidal (12.9%) burns were among the rural population. Major proportion of burns patients sustained burn injuries at home (78.2%). Major proportion of burns were caused by stove burst (40%) followed by liquid petroleum Gas leakage.

In Table 2, major proportion of accidental burn patients (35.8%) had 26-50% of the TBSA involved whereas major proportion of suicidal burns patients (86.4%) had >75% TBSA. Major proportion of patients with accidental burns (38.5%) were injured from 12 pm to 6 pm, whereas major proportion of suicidal burns 9 (40.9%) were seen between 12 am and 6 am. The outcome of major proportion of accidental burn patients (54.1%) was survival and subsequent discharge from the hospital, whereas death ensued during hospitalization in major proportion of suicidal burn patients (86.4%).

## DISCUSSION

In this study, it was observed that major proportion of burn patients, both accidental and suicidal, were in the age group between 26 and 50 years. These findings were also reported in a study conducted by Sarma and Sarma<sup>8</sup> wherein major proportion of burn patients were in the age group between 21 and 40. In this study, major proportion of both accidental and suicidal burn patients were females. Studies conducted by Liu *et al.*,<sup>9</sup> Gupta *et al.*,<sup>10</sup> Ghuliani *et al.*<sup>11</sup> reported major proportion of burn patients as females. In the present study, major proportion of burn patients were females as also reported in several studies such as Morales *et al.*, Bariar,<sup>12</sup> Subrahmanyam,<sup>13</sup> wherein burns cases were in females.

In the present study, major proportion of burn patients were rural. Similar findings have been reported by Bariar.<sup>12</sup> In the present study, major proportion of burns injuries

**Table 1: Distribution of burn patients according to socio-demographic profile**

Socio demographic factors	Total (N)	Nature of burns N (%)	
		Accidental burns	Suicidal burns
Age			
15-25	48	45 (93.8)	3 (6.3)
26-50	79	62 (78.5)	17 (21.5)
51-75	39	37 (94.9)	2 (5.1)
>75	4	4 (100)	0 (0)
Sex			
Male	56	50 (89.3)	6 (10.7)
Female	114	98 (86)	16 (14)
Religion			
Hindu	133	117 (88)	16 (12)
Muslim	14	14 (100)	0 (0)
Catholic	23	17 (73.9)	6 (26)
Occupation			
Unemployed	92	83 (90.2)	9 (9.8)
Employed	78	65 (83.3)	13 (16.7)
Residence			
Rural	125	110 (88)	15 (12)
Urban	45	38 (84.4)	7 (16.6)

**Table 2: Distribution of burn patients according to clinical factors**

Variable	Total (N)	Nature of burns N (%)	
		Accidental burns	Suicidal burns
Time			
12 am-6 am	60	51 (34.5)	9 (40.9)
6 am-12 pm	23	22 (14.9)	1 (4.5)
12 pm-6 pm	63	57 (38.5)	6 (27.3)
6 pm-12 am	24	18 (12.2)	6 (27.3)
Duration of stay (days)			
<1	13	10 (6.8)	3 (13.6)
1-7	56	44 (29.7)	12 (54.5)
>7	101	94 (63.5)	7 (31.8)
Outcome			
Death	62	43 (29.1)	19 (86.4)
Improved	80	80 (54.1)	0 (0)
LAMA	28	25 (16.9)	3 (13.6)
TBSA			
<25%	44	44 (29.7)	0 (0)
26-50%	53	53 (35.8)	0 (0)
51-75%	38	35 (23.6)	3 (13.6)
>75%	35	16 (10.8)	19 (86.4)

LAMA: Left against medical advice, TBSA: Total body surface area

were sustained at home, and several studies like Jayaraman *et al.*,<sup>14</sup> Gupta *et al.*,<sup>10</sup> Ghuliani *et al.*<sup>11</sup> report similar findings.

Prevalence of accidental burns was 87.1% and of suicidal burns was 12.9%. In a study conducted by Gupta *et al.*<sup>15</sup> in Punjab 87% of patients sustained accidental burns while 9% and 4% sustained suicidal and homicidal burns, respectively. TBSA involved was higher in suicidal burns (86.4%) as

compared to accidental burn injury. In a study in a tertiary care hospital in Punjab, 53% of patients sustained flame burns involving more than 45% of TBSA.<sup>15</sup> Outcome of major proportion of accidental burn victims (54.1%) was survival and subsequent discharge from hospital, whereas death ensued during hospitalization in major proportion of suicidal burn victims (86.4%). In a study conducted by Castana *et al.*, on outcomes of suicidal burn victims, deceased patients usually have a larger extent of burns<sup>16</sup>

## CONCLUSION AND RECOMMENDATION

Burns continue to be a major public health problem. To prevent burn injuries, it is necessary to develop a broad-based strategy including a spectrum of burn control measures, including burn prevention and strengthened burn care, as also better information and surveillance systems, and more investment in research and training.

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