

## Epidemiology of Burns: Application of JIPMER Burn Proforma

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### How to cite this article:

Elankumar S, Chittoria R K. Epidemiology of Burns: Application of JIPMER Burn Proforma. New Indian J Surg. 2019;10(1):103-106.

### Abstract

**Objective:** To study the epidemiology of burn patients attending Jipmer Tertiary Burn Care centre, Management and Outcomes using 'Jipmer Burn Proforma'. **Methods:** Retrospective analysis of all the burn patients proformas admitted to our Burn Unit over the period one year (January - December 2016). **Results:** 306 patients were admitted for burns. Male to female ratio was 1:1.2. Majority of the burns due to scald and flame burns, 21-40 years age group is the commonest age group involved. Poor educational and socioeconomic status was consistently associated. Child group (0-10 years) associated with poor housing standards. Fluid lag noted was around 40-50%. **Conclusion:** This study suggests the importance of public education on burns and improving the quality of first aid for burn patients and following the comprehensive burn injury documentation method.

**Keywords:** Burn proforma; Burn epidemiology.

### Introduction

Burns is one of the major causes of morbidity and mortality in developing countries like India. Approximately 7 to 8 lakh people sustain injuries due to burns every year in India. There is limited epidemiological data available for burn injury in South India. Females between 16 - 35 years of age are commonly affected [1,2,3]. Proper and early management of burns can reduce both morbidity

and mortality in burns patients. Treatment of burns depends on various factors like age, depth of burns, body surface area affected, cause of burns, duration, weight, patient's nutritional status etc. [4,5,6]. So a detailed individualised assessment of the patient using an comprehensive burns proforma will definitely bring a change in the treatment of burns patients.

### Materials and Methods

This study is a retrospective analysis epidemiology of burn patients records who were admitted in burns ward, Jipmer - Tertiary burn care centre and were examined and treated using a detailed proforma over the period of one year (2015-2016). The proforma was used to collect details on patient demographics, the cause and site of the burn, initial assessment, adequacy of first aid, time lag and fluid lag before commencing treatment, management and patient outcome. The analysis was done by collecting the information from the stored proformas in the Plastic Surgery department. Nutritional Management of Burn patients: Our Experience

### Jipmer Tertiary Burn Care Centre

#### Burns proforma:

Name..... Age..... Sex....  
Hosp No..... Educational Status:.....  
Tele Medicine No:..... Income:.....  
Marital Status (Married/Unmarried) .....  
Date & Time of Burns: .....  
Date & Time of Admission: .....

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**Received on** 02 | 05 | 2017, **Accepted on** 03 | 12 | 2018

Height in cms:.....Weight in kgs:.....

Time & Fluid Lag: ..... Address: .....

*Admission Status:*

- Treatment as Outpatient
- Acute New admission transferred from another hospital/burn unit
- Readmission for reconstruction
- Readmission for reconstruction/rehabilitation

**Referral Source**

*How did Burn Injury Happen?*

- Type of Burn:     Accidental     Suicidal  
                            Homicidal

*Etiology of Injury:*

- Fire/Flame     Scalds     Contact     Chemical
- Skin disease     Electricity     Other burns
- Unknown

*Place:*

- Indoors     Outdoors     Unknown

*Location of Injury:*

- Home     Other Private Dwelling     work
- Other Building     Conveyance     Other
- Unknown

*Remarks.....*

*Circumstances:*

- Accident (Work/Non Work related)
- Suspected Assault     Suspected self-inflicted
- Suspected arson     Unknown     Other

*Pre-Injury Conditions:*

- None     Pulmonary/Thoracic     Infection
- Neurological     Abdomen     Psychiatric     eyes
- Genitourinary     Hematologic     Ears
- Musculoskeletal     Multitrauma
- Cardiovascular     Metabolic/Endocrine
- Amputation     Other

Pre-Existing Disability (Yes/No)

Inhalation Injury (Yes/No)

Must Score and Risk Level.....

Caprini Risk Score.....

**Investigation**

*Date.....*

Hemoglobin.....

BT, CT.....

PT/INR.....

Blood Group.....

TLC.....

DLC.....

Blood Urea.....

S. Creatinine.....

S. Electrolytes.....

ABG.....

S. Protein/ Albumin.....

LFT.....

Blood Culture.....

Blood Transfusion.....

Urine Routine.....

Urine Culture.....

X-ray Chest/Limb.....

ECG.....

Wound Culture.....

Body Weight.....

Calories Intake.....

HIV/HBSAg.....

Other.....

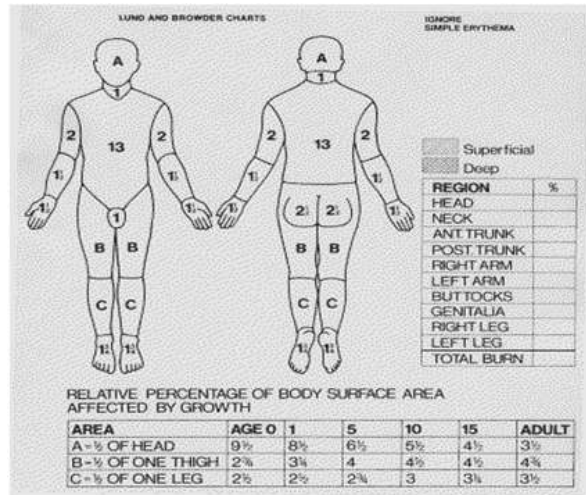
*Number of days with Ventilator Support:.....*

*Number of days in Hospital:.....*

*Total Burn Wound Procedures:.....*

*Total Surgical Procedures:.....*

*Total Burn Surface Area (%) [Lund-Browder Chart]:*



*At admission:*

Reassessment after 24-48 hours

**Disposition**

- Died     LAMA     Discharged     Extended Care

Facility  Referred to other Center  Other

Date of Disposition.....

Thromboprophylaxis yes/no

If yes, give details

Cause of Death

- Treatment Withheld  MOSF/Metabolic
- Burns Shock Pre-Existing Illness  Pulmonary Failure/Infection
- Burn Wound Infection  Cardiovascular Failure  Other

Remarks: .....

**Results**

The demographic details of the burn patients are shown in Table 1 & 2.

Total number of patients admitted was 306. Male to female ratio was 1:1.2. Of all, 0-10 years age group was 23.8%, 11-20 years age group was 12.1%, 21-40 years age group was 48.3%, 41-60 years age group was 10.8% and above 60 years of age was 4.9% (Table 1).

Thermal burns were the most common etiology

93.4%. Of 73 patients of 0-10 years age group 49 patients (67.1%) were due to scalds burns. Of 148 patients of 21-40 years age group 95 patients (64.1%) were due to fire/flame burns. Of total 19 electrical burn patients 13 (68.4%) were in the 21-40 years age group. (Table 2).

Of all burn patients, patients with neurological comorbidities (stroke, seizure disorders, post traumatic sequel) were 13 patients. 9 patients sustained burn injury during seizure episode and for most of them depth was full thickness burns.

Of 306 burn injuries 262 were occurred in indoor area (85.6%). And in such patients with fire/flame burn injuries significant proportion had (81 out of 149) inhalational injury.

Of 306 burn injuries majority (195) were due to accidental occurrence (63.7%). Suicidal burn injuries were 101 (33%). Almost all of the burn injuries in 0-10 year's age group were accidental and most of them occurred in indoor (63 out of 73). And many of the paediatric burn injuries were associated with poor housing facilities (lack of separate kitchen and living room, not having raised platform for cooking etc.).

12 of 19 electrical burn injuries occurred in 21-40 years age group and all of them were accidental and many of them due to work related.

Incidence was more towards the end of the year

**Table 1:**

	Total	Male: Female	Age Group					Type of Burn		
			0-10 years	11-20 years	21-40 years	41-60 years	Above 60 years	Thermal	Electrical	Chemical
Jan	21	9:12	6	4	7	4	-	21	-	-
Feb	24	10:14	6	1	13	1	3	24	-	-
Mar	24	10:14	7	3	13	1	-	23	1	-
Apr	22	11:11	4	3	12	1	2	19	3	-
May	18	9:9	4	3	7	3	1	14	3	1
Jun	29	15:14	7	2	16	2	2	25	4	-
Jul	21	6:15	4	2	11	4	-	21	-	-
Aug	19	7:12	4	1	10	3	1	19	-	-
Sep	31	15:16	3	5	21	1	1	30	1	-
Oct	35	17:18	9	6	14	6	-	34	1	-
Nov	32	14:18	8	2	15	5	2	29	3	-
Dec	30	15:15	11	5	9	2	3	27	3	-
Total	306	138:168	73	37	148	33	15	286	19	1

**Table 2:**

Age group (years)	Burn Etiology					Place		Mode of injury			Total
	Scalds	Contact	Fire/Flame	Electrical	Chemical	Indoor	Outdoor	Suicidal	Accidental	Homicidal	
0-10	49	9	14	1	-	63	10	-	72	1	73
11-20	17	5	12	3	-	31	6	6	30	1	37
21-40	27	13	95	12	1	129	19	81	61	6	148
41-60	8	3	19	3	-	26	7	13	18	2	33
>60	4	2	9	-	-	13	2	1	14	-	15
Total	105	32	149	19	1	262	44	101	195	10	306

last 4 months 128 patients compared to 180 patients in first 8 months. Majority of patients belonged to low socioeconomic group and poor educational qualification. Along with the demographics of burn injuries, adequacy of first aid were assessed and fluid lag were documented. Average time lag noted at presentation was around 3-3.5 hours and fluid lag noted was around 40-50% of the requirement of the time lag period based on Parkland formula.

Venous thromboembolism risk assessment calculated through Caprini risk assessment scale and prophylactic measures were given [7].

Nutritional assessment was done during admission & periodically and intervention given [8].

Number of surgical procedures and requirement of ventilator support were documented.

Investigation chart was incorporated in the burn proforma for documenting serial blood investigations.

Discharge details were also documented.

### Discussion

Though burn injuries are relatively common in our country their assessment and documentation are not upto the standards. The comprehensive proforma used in burns patients includes all the datas which makes the monitoring and treatment easy. Assessing the weight of the patient plays a vital role in fluid resuscitation calculation. But weighing burns patients is usually missed in general set up so weight was included in the proforma. Treatment and prognosis of the patient highly depend on the total body surface area. Surface area assessment is based on Lund Browder chart for accurate assessment during admission and reassessment after 24-48 hours [9,10,11]. Body surface area is depicted in picture format to make it easily accessible. Investigation chart is included in the proforma itself and the course of change during stay in hospital can also be known seeing the investigation chart. Venous thromboembolism occurs commonly in burns patients due to prolonged stay in hospital. Caprini risk assessment tool is used in the proforma for early detection and risk assessment of thromboembolism. Malnutrition is another common problem encountered by burns patients. So malnutrition universal screening tool (MUST) score is included in the proforma for calculating malnutrition risk and treatment. Poor documentation of burn injuries may have medicolegal implications especially in homicidal, work spot injury etc [12]. Time delay associated

with transportation, inadequate fluid resuscitation associated with sub-optimal first aid are also recognized and documented for future reference and medico-legal implications.

### Conclusion

This study suggests the importance of public education on burns and improving the quality of first aid for burn patients and following the comprehensive burn injury documentation method. Proper assessment of burn injury and patient status will minimise the morbidity and mortality and facilitates the rehabilitation of burn patient. Individualised risk assessment and specific treatment based on a comprehensive proforma is mandatory in patients with burns. Finally, comprehensive documentation will always be helpful in medico-legal aspects.

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