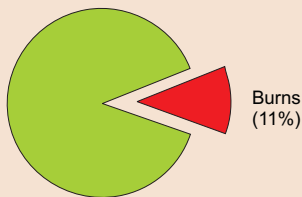


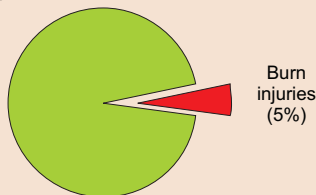


Nearly 95% of global burn deaths and disabilities are estimated to occur in low and middle income countries of the world. In India, during 2007, 20,772 persons lost their lives in a burn injury and 2793 were seriously injured (!). In Bengaluru, 360 persons lost their lives and 2,517 persons needed hospitalization for burn injuries in 21 hospitals alone. It is estimated that the ratio of deaths to hospitalisation to minor burns in Bengaluru will be 500: 5,000: 15,000.

Fatal



Non-Fatal



- ✦ **Fire accident at textile unit**
14th July, 2008, Times of India
Bangalore, Times city, page 3
- ✦ **Explosion at Reliance plant kills 3**
7th June, 2008, Times of India
Bangalore, Times nation, page 14
- ✦ **Industrial unit blaze kills 10 in Pune**
28th August, 2008, Times of India
Bangalore, Times nation, page 10
- ✦ **Children bear the brunt of burn injuries**
30th October, 2008, Times of India
Bangalore, Times city, page 3
- ✦ **Boy suffers 90% burns While Catching Pigeons, Touches HT Wire**
14th September, 2008, Times of India
Bangalore, Times city, page 3

Mrs. M, a young (18 Year) just married female was going through several hardships at home. She had even hinted that she would like to end her life, but family members did not pay attention to her “cries of help”. On the fateful evening, she poured kerosene and set herself alight. Immediate care was given at a nearby government hospital and was referred to Bengaluru with extensive burns of 74%. She reached Victoria hospital nearly 18 hours after she was injured and expired the next day.

S, a 2 year baby residing in urban Bengaluru was victim of scalding due to accidental spillage of hot water at her residence. Her mother had left her in the bathroom with the hot water tap open, while she had gone to collect milk downstairs. Baby just moved under the tap and was exposed to the hot water. Firstly patient was taken to nearby private hospital for care and then referred to Victoria hospital. On admission, she had 80% of scalds all over body and expired the following day.

Burn injuries are extremely common and are a major public health problem. The case studies above are real-life studies and many more are regularly reported in the media. Every day, we read, listen or witness such instances. Print and visual media gives prominence for such instances, whenever it occurs among high-profile members of the society. However, thousands of such instances happen every year taking away lives of young people. Routinely, such instances become another set of numbers to the already existing grim statistics and lessons are not learnt.

Apart from high numbers of deaths, the pain, suffering and agony of burn survivors are immeasurable. Deformities and contractures result in life long physical problems along with limiting optimum and normal functioning of the individual. The psychosocial problems after burn injuries remain in the minds of affected individuals, their family members and their young children for years to come.

Burn injuries occur due to a variety of electrical, thermal, mechanical products and can be accidental, suicidal or even homicidal in nature. As investigation and research are limited to identify patterns and causes for burns, the precise determinants and mechanisms are clearly not known. Consequently, efforts towards prevention have been limited.

The problem

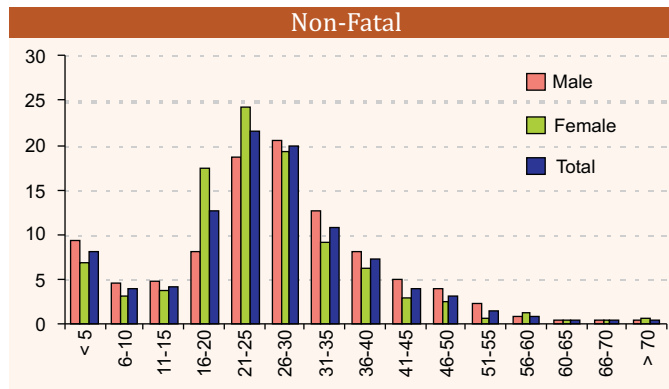
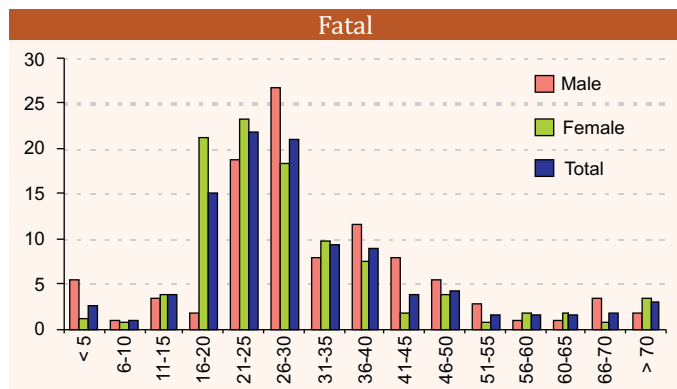
- ✦ In India, during 2007, 20,772 persons lost their lives in a burn injury and 2793 were seriously injured (indicating extreme under reporting of nonfatal injuries).(1)
- ✦ In Karnataka, during the same year 1587 deaths and 30 serious burn injuries were reported. The number of burn injuries in Bengaluru is not clearly known. (1)

- ❖ As per data collected under BISP, 360 persons lost their lives due to burns in 2007. In a one-year period, 2,517 persons were hospitalized with a ratio of 1:7. (2)
- ❖ The actual numbers could be much higher as many receiving care in nearby clinics or nursing homes and in other institutions have not been included. It is estimated that the real numbers could be in the range of 500: 5,000: 15,000 with a ratio of 1:10:30.

Victoria hospital which has an exclusive burns management centre recorded the highest number of cases in the study. This exclusive centre provides care for large number of patients from lower and middle-income strata of Bengaluru and nearby places. Even though care is available in few of the private sector hospitals, the numbers could be smaller as many poor patients are not able to afford care. Due to lack of adequate facilities in other hospitals, burn patients from other hospitals are referred to Victoria hospital.

Profile and pattern

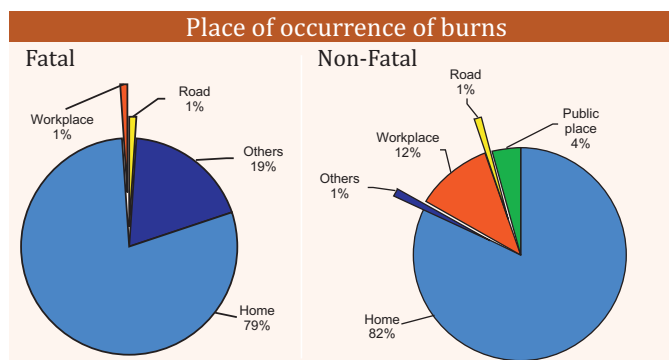
- ❖ Deaths due to burns were highest in 16 to 40 years, with every fifth person being in 21 to 30 years.
- ❖ One fourth of burns deaths occurred in less than 20 years age group.
- ❖ Even though there was a male predominance, women were overrepresented in 15 to 29 years for both fatal and nonfatal injuries (51%: 49% in non-fatal and 68%: 32% in fatal injuries).
- ❖ The overall male to female ratio was 2: 1, while it was reverse for women in younger age groups. This phenomenon has been reported by many Indian studies and causes are primarily attributed to cultural issues. (3,4)
- ❖ Housewives were in larger numbers to the extent to 41% in younger age groups, followed by people



in labourer categories (20%) and 5% were students.

Risk factors

- ❖ Every three out of four burn deaths and injuries occurred at home and the remaining in industrial areas. Occupational burn deaths were primarily in medium and small-scale industries.
- ❖ Nearly two thirds of burn injuries occurred during evenings and late nights.
- ❖ As with other type of injuries, the involvement of alcohol was poorly documented in both police and hospital records. Nevertheless, 6% of deaths could be linked to alcohol consumption. It is likely that involvement of alcohol would be much higher and needs to be examined in future studies.



- ❖ Stove bursts, cylinder blasts and accidental burns had occurred inside the house as per police reports. Kerosene stoves, gas cylinders, oil lamps, cooking materials, hot liquids, electric burns and crackers were the primary agents responsible for burn injuries. Even though an attempt was made to gather this information in hospital reports, it was found to be difficult.
- ❖ Based on intent, 16% were suicidal, 2% homicidal and the rest reported to be accidental in nature. It is difficult to determine the intent without appropriate investigations and hence misclassification could have occurred.
- ❖ The causes (especially environmental and product related factors) of burns were not clearly known in majority of the instances, including deaths. A previous NIMHANS study on Epidemiology of suicides revealed that 18% of suicides were due to burns (5). Risk factors were mainly found to be multiple, cumulative and interlinked. A high occurrence of burn related deaths among young women require further research to understand the specific circumstances and mechanisms.

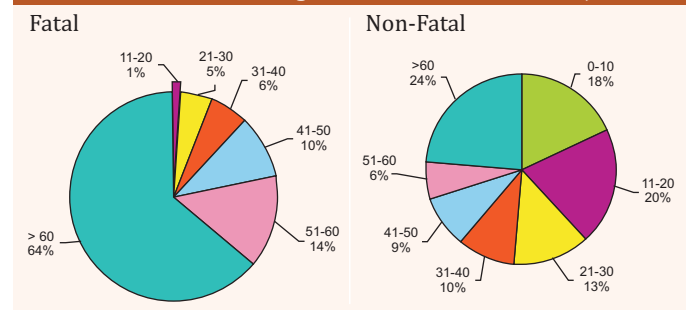
In a community based project in Bengaluru, burns was the commonest (41%) type of domestic injury. Majority were first degree burns and were accidental (39%). Hot objects (53%) or hot liquids (32%) were the frequent agents. Females were affected in greater numbers (87%), and three fourth of domestic burn injuries occurred in the kitchen (6).

Emergency care

- ❖ 33% of fatal cases and 57% of non fatal cases had received first aid in the first contact hospital.
- ❖ One fourth (24%) of the burn victims received health care within 24 hours and only 8% within 3 hours.



Extent of burns among fatal & non-fatal burn injuries



- ❖ Burn victims were transported in either a private vehicle (38%) or ambulance (32%) in inter hospital referrals or autorickshaw (25%).
- ❖ Three fourths of the referrals were from a nearby government hospital.

Impact

Burn injuries are known to have high mortality. In the present series, it was observed that more than two thirds of patients brought to hospitals had burns of > 60%. More than 90% of patients were classified as seriously injured patients requiring intense management. Consequently the mortality even in the hospitals was much higher.

Prevention and control

Many of the high-income countries have successfully reduced burn mortality and morbidity due to improved standards of living, availability of safe products, stringent safety regulations and better trauma care. In countries like India, it is a major challenge as there could be several contributing factors and the epidemiological determinants have not been well understood. However as per WHO, it is possible to reduce burn mortality and morbidity through combination of measures aimed not only at reducing the likelihood of occurrence of fire, but also by reducing the severity and impact of a burn injury through appropriate trauma care practices (7). Some promising strategies include

- ❖ Improving living conditions along with socioeconomic standards.
- ❖ Commonly used products like kerosene stoves, electrical products, and water heaters to be made safer as per standards.
- ❖ Better working environments and safer products - appliances in factories.
- ❖ Mandatory installation of fire and smoke alarms in factories, public places and schools/colleges.

- ❖ Compulsory provision of fire escape routes in educational institutions, and in all public places.
- ❖ Training of police, teachers, drivers and health care workers in provision of first aid care.
- ❖ Improving facilities for management of burns patients in all hospitals, especially rural and town areas.
- ❖ Educating people on use of cold water soon after occurrence of burns.
- ❖ Banning use of dangerous fireworks during deepavali festival and other times.
- ❖ Information on environment product responsible and other contributory factors need to be understood by future research.

services. The exact burden on the health sector is unclear due to lack of good quality data. Preventing burn injuries will be a major challenge as its occurrence is closely linked to living standards and cultural practices. More research through establishment of burn injury registries in designated centres will unfurl specific epidemiological characteristics that can be used to develop specific interventions.



Burn injuries place huge burden on the health sector for provision of care and long-term rehabilitation

What not to do	What to do
<ul style="list-style-type: none"> ❖ Do not commence first aid before ensuring your own safety (switch off electrical current, wear gloves for chemicals, etc.). ❖ Do not apply ice. ❖ Do not open the blisters with a needle or pin. ❖ Do not apply paste, oil, kumkum (a paste made from turmeric) - or raw cotton to the burned area. ❖ Do not apply any material directly to the wound as it might become infected. ❖ Avoid application of topical medication until the patient has been placed under appropriate medical care. 	<ul style="list-style-type: none"> ❖ Stop the burning process by removing clothing and irrigating the wounds. ❖ Apply cold water or allow the burnt area to remain in contact with cold water for some time. ❖ In flame injuries, extinguish the flames by allowing the patient to roll on the ground, or by applying a blanket, or using water or other fire-extinguishing liquids. ❖ In chemical burns, remove or dilute the chemical agent by copiously irrigating the wound with water. ❖ Obtain medical care.

Source: 7

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Bengaluru Injury / Road Traffic Injury Surveillance Programme is a collaborative Programme between Bengaluru City Police, 25 hospitals, Bengaluru Metropolitan Transport Corporation and Bruhat Bengaluru Mahanagara Palike. The programme is coordinated and implemented by National Institute of Mental Health & Neuro Sciences and facilitated by Indian Council of Medical Research and World Health Organization, India office. The programme aims at reducing / preventing injuries, improving trauma care and strengthening rehabilitation services.



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