Mortality

Fire-related burns were responsible for 282,000 deaths in the world in 1998, the majority of which (96%) occurred in developing countries. Table 1 below shows the distribution of these deaths in the WHO Regions - Africa (AFR), the Americas (AMR), Eastern Mediterranean (EMR), Europe (EUR), South-East Asia (SEAR), and Western Pacific (WPR). More than half of all fatal fire-related burns occurred in South-East Asia, but Africa had the highest rate per 100,000 population.

Furthermore:
- Burns represent the fourth leading cause of unintentional injury death in the United States.
- Burns account for 1300 paediatric deaths per year in Ireland.
- Burns are the leading cause of adult deaths in the slums of Karachi (Pakistan).
- Burns cause an estimated 1700 deaths annually in Nepal (seven deaths per 100,000 population).
- Burns were responsible for 282,000 deaths in the world in 1998, the majority of which (96%) occurred in developing countries. In the rural areas of Papua New Guinea, for example, the average interval from the time of the burn to arrival in the hospital was estimated to be 42 hours.
- Most burn injuries occur in an urban environment (e.g. 62% and 89.5%, respectively, in developing and developed countries). In the rural areas of Papua New Guinea, for example, the average interval from the time of the burn to arrival in the hospital was estimated to be 42 hours.

Magnitude of the Problem

In 1998, fire-related burns ranked ninth among the leading causes of global burden of disease (based on deaths and disability) among children aged 5-14 years.

Who is affected?

Burns affect mainly children and the elderly. A very high percentage of patients admitted to burns units world wide are children under 12 years of age, e.g. 70-75% in a study conducted in South Africa.26 Besides children, the elderly represent a significant percentage of burn victims: they are often injured at home as a result of faulty or misused electrical goods, and frequently their burns may be associated with alcoholism or chronic disease.27 In some countries, especially in Asia, females are at higher risk for burns because of the use of open fires for cooking, heating and lighting, which can easily set alight the loose clothing they wear.28 Violence against women, which is related to gender inequality, is another factor. In India, for example, about 70% of burn victims are women.

Risk factors

Some of the major risk factors for fire-related burn injuries include the following:

1. Alcohol and smoking

Alcohol abuse and smoking, particularly in combination, represent the main cause of domestic fires in developed countries. It has been reported, for example, that cigarettes account for 26% of all fatal fires in the United States.

Local cultural practices

Use of floor-level stoves, bedside fires, and loose flammable attire, as well as flammable materials in building construction, and fire-walking are some examples of culturally related risk factors for burn injuries. The tandar, a typical underground oven in Turkey, is a significant cause of burns, particularly in children.29 Bath-related burns are more frequent in Japan than in any other country. This has been attributed to their lifestyle and bathing systems, as well as an increasing elderly population.

Socioeconomic status

Low socioeconomic status is a widely acknowledged risk factor for burns in both developed and developing countries.20-25 Overcrowded living conditions, lack of proper safety measures, and insufficient parental supervision of children are some of the factors associated with low socioeconomic status that could contribute to the occurrence of burns.

Gender inequality

In some Asian countries such as Bangladesh, India and Pakistan, the disfiguring of women by throwing acid or burning them to death are frequent forms of violence against women. The reported reasons for this phenomenon, which is rooted in gender inequality, include disputes concerning marriage and dowry.26-28

Epilepsy

Burns during an epileptic seizure may be an important risk factor especially in countries, e.g. Jamaica,29 where untreated epilepsy was the second most common cause of burns cases admitted to hospital.

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Violence

A considerable number of burn injuries in children result from abuse and neglect, and cannot be attributed to the common place where children sport receptacles containing hot liquids and where women are injured by hot cooking oil or a stove exploding. Males, in both the developing and developed world, often sustain burns in the workplace; e.g. scalds, chemical burns, and electrical burns (especially due to high voltage currents).44 Most burns occur in an urban environment (e.g. 62% and 85%, respectively, in two studies conducted in India45 and Spain46). However, adverse consequences are higher in the rural areas where inadequate pre-hospital care leads to more severe sequelae and disabilities. In a rural area of South Africa, for example, the average interval from the time of the burn to arrival in the hospital was estimated to be 42 hours.

Table 1. Estimated number of deaths and mortality rate due to fires, by WHO Region and income group (high and low/middle), 1998

<table>
<thead>
<tr>
<th>REGION</th>
<th>WHO</th>
<th>AMR</th>
<th>EMR</th>
<th>EUR</th>
<th>SEAR</th>
<th>WPR</th>
<th>WORLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total deaths (000)</td>
<td>170</td>
<td>49</td>
<td>126</td>
<td>72</td>
<td>107</td>
<td>336</td>
<td>1171</td>
</tr>
<tr>
<td>Death rate per 100,000</td>
<td>11.3</td>
<td>1.3</td>
<td>1.4</td>
<td>2.4</td>
<td>1.2</td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td>% of global mortality</td>
<td>24.1</td>
<td>1.6</td>
<td>5.7</td>
<td>1.8</td>
<td>1.9</td>
<td>3.9</td>
<td>100</td>
</tr>
</tbody>
</table>


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1. Global data are only available for fire-related burns.
2. Injuries due to exposure to smoke, fire and flames.
3. The WHO Regions do not correspond exactly with geographic regions. They are made up of countries and areas under the six WHO regional administrations.
Prevention

Although survival from serious burns has been improving in several regions, primary prevention still remains the best way to cope with the problem. For instance, in Israel, it has been found that school-based burns prevention programs significantly improve children’s risk knowledge and injury-control beliefs.

PREVENTION OF FIRE BURNS
- Promote the use of fire-retardant fabrics for children’s sleepwear and educate regarding the wearing of loose, flowing garments.
- Avoid smoking in bed and encourage the use of child-resistant lighters.
- Enclose open fires and limit the height of open flames in homes in developing countries.
- Promote the use of safer stoves and less hazardous fuels.
- Improve the treatment of epilepsy, particularly in developing countries.
- Promote the use of smoke detectors, fire sprinklers, and fire-escape systems in residential dwellings.
- Apply safety regulations to housing designs and materials, and encourage home inspections.
- Promote fire safety education.

PREVENTION OF SCALDS
- Lower the temperature in hot water taps.
- Improve the design of kitchen utensils and stove manufacture, including more stable cooking surfaces and devices to protect and prevent access by children.
- Promote safety education.

First aid

DON’TS
- Do not peel off the clothing.
- Do not apply paste, oil, dustmum (turmeric), or raw cotton on the burnt area.
- Do not apply ice.
- Do not open the blisters with any needle or pin.
- Do not apply any material as the wound might become infected.
- Avoid application of topical medication until the patient has been placed under appropriate medical care.
- Do not give oral fluids.

DO’S
- 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. Rapidly place the victim in a supine position.
- In chemical burns, remove or dilute the chemical agent by using a neutralizing agent when indicated, and by copiously irrigating the wound.
- Get a doctor to examine the patient.