

Cross Sectional Study of Burn - Experience in 158 Cases

Farhana Shahid¹, Tayyaba Musarrat Jaha Chowdhury², Asma Begum³, Haibuzzaman Chowdhury⁴,
Nashid Tabassum Khan⁵, Sanjida Akhter⁶, Mohammad Jubaidul Kabir⁷, Palash Kumar Bose⁸, Omma Hafsa Any⁹

Abstract

Background: Burns are a global public health problem. **Objectives:** To find out the status of burn victims along with the causes and consequences of fatal burn injuries.

Material and method: The data is collected from the autopsy reports of Dhaka Medical College in 2012. The purpose of this study was to record and evaluate the causes and magnitude of the fatal burn injuries. **Results:** In 2012, among total 2527 deaths reported at Dhaka Medical College, 158 (6.25%) cases were due to burn. The victims within 21 to 40 years were more vulnerable in comparison to other age groups. Female were more vulnerable than male (55.69% vs. 44.31%). Accidental burn was the commonest cause (55%). **Conclusion:** Thermal burns and related injuries are major cause of death and disability all over the world as well as Bangladesh. Detail study regarding flame burn is required to be carried out in this country.

Keywords: Flame burn; death.

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Introduction

A burn is an injury to the skin or other organic tissue primarily caused by heat or due to radiation, radio activity, electricity, friction or contact with chemicals.¹ Thermal (heat) burns occur, when some or all the cells in the skin or other tissues are destroyed by hot liquids (scalds), hot solids (contact burns) or flames (flame burns).²

In many high-income countries, burn death rates have been decreasing and the rate of child deaths from burns is currently over 7 times higher in low and middle income countries than in high income countries.³ The minimum temperature for producing a burn is about 44°C for exposure of about 5 to 6 hours. At 65°C, two seconds are

1. Assistant Professor, Dept. of Forensic Medicine, Bangladesh Medical College, Dhaka, Bangladesh.
2. Assistant Professor, Dept. of Forensic Medicine, Holy Family Red Crescent Medical College, Dhaka, Bangladesh.
3. Associate Professor, Dept. of Forensic Medicine, Ibn Sina Medical College, Dhaka, Bangladesh.
4. Professor, Dept. of Forensic Medicine, Anwar Khan Modern Medical College, Dhaka, Bangladesh.
5. Associate Professor, Dept. of Forensic Medicine, Z.H. Sikder Women's Medical College, Dhaka, Bangladesh.
6. Assistant Professor, Dept. of Forensic Medicine, Green Life Medical College, Dhaka, Bangladesh.
7. Associate Professor, Dept. of Forensic Medicine and Toxicology, Tairunnessa Memorial Medical College and Hospital, Gazipur, Bangladesh.
8. Associate Professor, Dept. of Forensic Medicine, Enam Medical College, Savar, Bangladesh.
9. Associate Professor, Dept. of Pharmacology & Therapeutics, Z.H. Sikder Women's Medical College, Dhaka, Bangladesh.

Correspondence: Dr. Farhana Shahid. e-mail: shahidfarhana71@gmail.com

sufficient to produce burns and full thickness destruction of skin occurs within seconds above 700C.⁴

If there is formation of blister, then that occurs within 2-3 hours. The erythema around a blister or deep injury passes off by 2nd day.⁵ Pus formation occurs by 3rd day. Within the next one or two days, there is slough formation, which is shed off once by the end of the first week. Burn injuries involving the skin and deeper tissues take a minimum of 2 weeks to heal.⁶

In 2004, nearly 11 million people worldwide were burned severely enough to require medical attention.⁷

Females and males have broadly similar rates for burns according to the most recent data.⁸ This is in contrast to the usual injury pattern, where rates of injury tend to be higher in males than females.⁹ In case of burn, higher risk for females is associated with open fire cooking, or inherently unsafe cook stoves, which can ignite loose clothing. Open flames used for heating and lighting also pose risks, and self directed or interpersonal violence are also factors.¹⁰

Burns occur mainly in the home and work place. Community surveys in Bangladesh and Ethiopia Show that 80-90% of burns occur at home.¹¹ Children and women are usually burned in domestic kitchens, from upset receptacles containing hot liquids or flames or from cook stove explosions. Men are most likely to be burned in the workplace due to fire, scalds, chemical and electrical burns.¹²

Thermal burns and related injuries are major cause of death and disability. Even in developed countries more than two million individuals annually are burned seriously and require medical treatment.¹³

Materials and method

This descriptive cross sectional study was carried out in Dhaka Medical College in 2012. The

purpose of this study was to record and evaluate the causes and magnitude of the fatal burn injuries. For the purpose of the study, burn injury was defined, as a body lesion due to an external cause resulting from mechanical, thermal, chemical or radiant heat. Due permission was taken from respective autopsy surgeons.

Results

Data from the autopsy reports of Dhaka Medical College in the year 2012 were collected. The different causes of death, age and sex distribution and the causes of burn according to the autopsy reports are tabulated below (Table I, II, III & IV).

Table I: Causes of death according to autopsy report at Dhaka Medical College in the year 2012 (N = 2527)

Cause of death	Frequency	Percentage (%)
RTA	614	24.30
Homicide	478	18.92
Poisoning	403	15.95
Suicide (Hanging)	344	13.61
GRP	190	7.52
Burn	158	6.25
Natural	122	4.83
Others/No comment	72	2.85
FFH	63	2.49
Electrocution	45	1.78
Still born	23	0.91
Drowning	15	0.59

Table II: Age distribution of death victims due to burn (n=158)

Age group (in year)	Frequency of victim	Percentage (%)
01-20	34	21.52
21-40	106	67.09
41-60	13	8.23
61 and above	5	3.16

Table III: Sex distribution of death victims due to burn (n=158)

Sex	Frequency of victim	Percentage (%)
Male	70	44.30
Female	88	55.70

Table IV: Cause of death from burn (n=158)

Causes	Frequency	Percentage
Burn like cooking gas leakage, burst stoves, etc.	87	55.06%
Trapped in burning house	43	27.22%
Dowry death	17	10.76%
Pouring kerosene oil and ignite the fire	11	6.96%

Discussion

A severe burn injury is the most devastating injury a person can sustain and yet hope to survive.¹ In India over 1,000,000 people are moderately or severely burnt every year. Nearly 173,000 Bangladeshi children are moderately or severely burnt every year.¹⁴ Women are most vulnerable because of cooking, use of loose fitting dress, suicide and assault.² In this observation 21-40 years age group are more affected than others. This scenario differs from USA, where children under age 5 and older person above 65 years are more affected and mostly occurred due to home fire equipment and smoking.⁴ But in our study, this middle age group are more exposed in cooking, accident in factories and in some political violence. This study revealed that signs of vitality (soot in airways and/or digestive tract) were found at autopsy in large majority of victims who died from burn. Sometimes person died during burn but there is no involvement of burn. As there is immediate combustion of oxygen and releasing of carbon particles, these particles are asphyxiant and the person died due to asphyxia.¹⁵

In Bangladesh, Colombia, Egypt and Pakistan, 17% of children with burns have a temporary disability and 18% have a permanent disability.¹⁶ Burns are second most common injury in rural Nepal, accounting for 5% of disabilities. In 2008, over 410,000 burn injuries occurred in the United States of America, with approximately 40,000 requiring hospitalization.¹⁷

According to WHO, along with adult women, children are particularly vulnerable to burns. Burns are the 11th leading cause of death of children aged 1-9 years and are also the fifth most common cause of non total childhood injuries. While a major risk is improper adult supervision, a considerable number of burn injuries in children result from child maltreatment.¹⁸ There are

several causes of flame burn in our country. These are-

- i) Accidental, this occur mainly in the home during household working like cooking, specially gas leakage, burst stoves, setting clothes alight, particularly women and children wearing "Shari".
- ii) Trapped in the burning house.
- iii) Using fire pots in the winter especially old and children.
- iv) Warming the lower part of the body after delivery, specially women in remote village area.
- v) Homicidal and suicidal, pouring kerosene oil, diesels, gasoline or other inflammable liquids on to a human body and setting alight.¹³

Burns have always been considered as one of the most destructive injuries, causing not only death but also major economic and psychological impacts and long term somatic sequelae as well. Moreover, burns are also among the most expensive traumatic injury, because of long hospitalization and rehabilitation and costly wound and scar treatment. Non fatal burn injuries are a leading cause of morbidity. Now a day burn is a major concern for health practitioners in our country, because of some burn cases occurred due to political violence which lead of death. The result of this study provides the necessary information to develop proper burn prevention programs, thereby reducing the frequency of burns and burn related death. For prevention of burn incidence we should take steps for:

- 1) Improvement of public awareness by the concern authority
- 2) Training of communities in first aid.
- 3) Modernized health equipments.
- 4) Proper implementation of law.

Burns are preventable. High income counties have made considerable progress in lowering rates of burn deaths, through a combination of prevention

strategies and improvement in the care of people affected by burns.

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