Burn cases: A medical and social problem in Bangladesh
Sen SL, Rashid MA

Abstract
Burn is one of the most common devastating events all over the world. In the developed countries they have the adequate control and preventive measures but in our country we do not have any preventive measures even at house, offices, factories where it happens frequently. Not only that, till now, we do not have any specialized hospital for the proper management of burn patients. Resulting huge number of patients die every day. Due to initial mismanagement for the burn patients causing life threatening complication like burn contracture leading physically disabled and ultimately they become the burden for the family and for the society as well. So, country urgently needs a specialized burn hospital and upgrading the existing facilities for the burn patients in our hospitals.

Introduction
Bangladesh, a developing country with a population of 120 million people. Per capita income is $386. High infant mortality rate (IMR), low adult literacy rate, high unemployment and high gender inequality all prove that the poverty in Bangladesh is widespread. Studies indicate that about 45% of the population live under acute poverty while 28% people in the urban and 25% in the rural areas live under poverty line 2, having less than 1805 kcal per day per person. Deprivation of basic human needs: food, clothing, shelter, medical care and education are probably the universal definition of poverty. Natural catastrophic climatic disaster is a common phenomenon. A considerable number of diseases such as dengue fever, malaria, infant diarrhea and upper respiratory tract infection of under five ages are some of the almost unique problems of our health sector. In the new millenium, though we have gained some momentum in different sectors but in the health sector and health care delivery system till remains below our expectations. Our government hospitals are not able to fulfill all the requirements for the patients for all levels. Our doctors patients ratio, doctors nurses ratio, patients bed ratio are quite unsatisfactory. The number of patients is increasing day by day but the hospital supplies not increasing in the same parallel way. So, naturally, our hospitals are not able to cope with that increase demand. Recently, this has been aggravated by a new and added problem of violence by chemical burns so called acid burns.

Burn Incidents in Bangladesh
Throughout the country, an estimated 1% of the population suffers from different types of burns each year. The common causes of burns in Bangladesh are as follows:

A. Flame burn, 75% of incidences occur due to flame injury.
1. 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".  
2. Trapped in the burning house.  
3. Using fire pots in the winter, especially old and children.  
4. Warming the lower part of the body after delivery specially women in remote village area.  
5. Homicidal and suicidal, pouring kerosene oil, diesels, gasoline or other inflammable liquids onto a human body and setting alight.

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B. Acid burn (chemical burn)
1. These are almost all homicidal cases except a very few reported cases of accident. Nitric acid, sulfuric acid and hydrochloric acid are the most common examples. This constitutes 20% of total burn cases.

C. Others:
5% burns occurs due to electric burn. The cause of electric burn is mainly accidental. The majority of such cases occur due to electric short circuits in garments factories or other small factories, congested markets and slum areas.

Acid Burn (Chemical Burn)
The incidence of chemical burn, so called acid burn a recent, dreadful man made crisis has been arising and gradually occupying in alarming position. In the beginning, it was women who were the targets of these sorts of violence, however, these attacks have spread beyond the gender limit and now a days, a considerable number of men as well as children are reported as victims. There are no real statistics to state how many victims becoming physically disabled and becoming the burden of the society each year.

Management for burn cases
The following measures should be considered immediately.
(a) Patient should be removed from the source of incidence.
(b) Patient should be completely undressed for easy ventilation, pouring of copious water whatever may be the cause and all body surfaces should be examined.
(c) The first priority must be maintenance of a patent airway, effective ventilation, and support of the systemic circulation. When the patients suffer inhalation injury of upper respiratory tract, endotracheal intubation should be performed within 6-8 hours after injury, because laryngeal or tracheal edema may not occur within this period.
(d) Examine the extend of the burn (TBSA). We usually follow the Lund and Browder chart which allows for difference in various age groups. The chart is depicted in figure -1.

Management for burn cases

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Figure-1 : Estimation of total burn surface area (TBSA) (Browder chart)

(e) If the extension of burn involves more than 20 % total body surface area (TBSA) fluid resuscitation should be started because the systemic inflammatory response starts resulting capillary leakage\(^2\) The fluid should be adjusted using modified Parkland formula\(^3\) (shown in Tab-1.)
Table-1

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
</tr>
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<tbody>
<tr>
<td>0 hours</td>
<td>25-48 hours</td>
<td>49 + hours</td>
</tr>
<tr>
<td>(0 hours) = time burn occurred (hours 0-24)</td>
<td>Change lactated Ringer's solution to D5W and adjust based on urine output as shown in Day 1.</td>
<td>Change to maintenance po intake and/or enteral feedings.</td>
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<tr>
<td>Lactated Ringer's solution for 24 hours = 4 cc/kg/ % burn. Give ½ of total volume in 1st 8 hours and give ½ of total volume in 2nd 16 hours.</td>
<td>Adult: 30-50 cc/hour</td>
<td>Children: 1.0 cc/kg/hour</td>
</tr>
<tr>
<td>Adjust infusion rate as necessary to keep urine output:</td>
<td>Albumin at 0.3-1.0 cc/kg/ % burn/16 = cc % Albumin/hour. Do not vary based on urine output.</td>
<td></td>
</tr>
</tbody>
</table>

(f) As pain increases the heart rate, blood pressure and metabolic rate, pain should be control. It also decreases posttraumatic stress of the patients.

(g) Proper antibiotic should be started as soon as possible to prevent secondary infection.

(h) Dressing to be done at regular intervals.

Surgical management

(a) Early excision followed by split thickness skin graft (STSG) is very important to decreases the morbidity and mortality.

(b) Release the contracture followed by split-thickness skin graft (STSG) and full thickness skin graft (FTSG) in case of post burn contracture. (Fig - 2, 3, 4 & 5)

(c) Physiotherapy is another important event postoperatively.

(d) Recently, "Scar therapy gel", "silicone gel sheet", pressure garments or in combination of pressure garments and silicone gel sheet is very effective measure for prevention of hypertrophic scar or keloid formation.

Burn management facilities in Dhaka medical college hospital

Dhaka medical college hospital (DMCH) is the only government-run hospital where all burn patients come from all corners of Bangladesh. But it has only 8 beds for the burn patients. Besides this, there is no special allocation for the acido burn patients treated in DMCH. Hopefully, last year (July 2001), an operation theatre with all equipments is started its functioning in full swing. Actually, it was a useless "Veranda" of ward no 35/B, DMCH. Here operations are going on almost everyday. Previously, there was no fixed burn OT (Operation Theatre) for the burn patients. The doctors of burn unit get the OT (Operation Theatre) facilities once a week.

Figure- 2: (Pre-operative) Severe post burn & Figure-3 : (Same patient, postoperative) contracture affecting face, neck and upper chest wall. Chin completely attached to upper chest wall.

Future steps

Full fledged 50 bedded special unit for management of all burn patients as well as special facilities for treatment and rehabilitation centre for the burn victims and survivors are going to inaugurate last of this year. With sophisticated equipments, four units of ultra-modern operation theatre, modern post-operative room, full fledged rehabilitation centre and education and training centre include with this special unit. After establishing this 50 bedded unit, it could be possible to provide all sophisticated modern treatment especially for the acid victims. Recently, the present government realizes the acute need for burn hospital for the better management of burn patients, the proposed 50 bedded burn hospital is going to be upgraded to 100 bedded.
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Fig- 4: Post burn contracture affecting face, nose and all fingers. & Fig- 5: Photograph showing early excision followed by STSG.

Effective measures
To decrease the incidence of burn accident, there should be increase awareness in community and society through proper propaganda using mass media like radio, television, poster, leaf let, community based meeting, symposium etc. School teachers, Imam of the mosque, leader of the village may play an effective role. Establishment of proper physiotherapy and rehabilitatory system for the victims should be ensured.

Conclusion
There should be the provision of training and sensitization of personnel dealing with burn patients. Expert and special trained doctors as well as paramedics should be given priority for working at very specialized burn hospital. More care should be given for handling of burn cases.

References