

FREQUENCY AND AGE-SPECIFIC PRESENTATION OF BURNS

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ABSTRACT

Background: Burns are a major source of morbidity and mortality, and their incidence is high in the Eastern Mediterranean region, including Pakistan. Appropriate measures to prevent burns require adequate knowledge of the epidemiological characteristics and associated risk factors, which may vary among communities. **Objectives:** The primary objective of this study was to investigate the epidemiological features of patients of burns in Rahimyarkhan, and secondarily based on these findings appropriate measures will be suggested for prevention of burns. **Study design and duration.** This was a descriptive study conducted from Feb to Sep, 2010. **Patients and Methods:** This study was conducted in the Burn Unit of Sheikh Zayed Hospital, Rahim Yar Khan. All the burn patients were included in the study. Data regarding age, sex, causative agents, body parts involved, geographical origin, mode and nature of injury and outcome were obtained from the hospital record. Analysis was done with SPSS version 14.0. **Results:** Total victims were 109 (56 males, 53 females). Age ranged from 7 months to 70 years (mean 14.30 ± 4.31 years). Children <10 years were 53 (48.6%), 11-20 years were 19 (17.43%) and 21-70 years were 37 (33.9%). 65 were from rural areas and 44 from urban. 67 (61.41%) cases were caused by flame, 31(28%) by hot liquids, 8 (7%) by electricity, 3(2.7%) by chemicals. 107 were accidental and 2 suicidal. 85 healed completely, 16 had complications and 8 expired. **Conclusion:** By using safe kitchen appliances, majority of all burn accidents can be prevented. Measures should be taken to launch a public health education campaign that will reduce the incidence of these fatal casualties.

Keywords: Burn epidemiology, age specific burns, safe kitchen appliances

INTRODUCTION

Injuries caused by burns are mostly life threatening and they require specialized care. Scars of these injuries may last for a lifetime. In recent years, these injuries have reached an epidemic proportion.¹ Both developing and industrialized nations have to face this important public health problem. Burns may be intentional or accidental. According to WHO estimates, injuries associated with burns have escalated over the last several years, and have reached marked proportions.² Incidence is higher among poor countries, mainly because developed nations have adopted sound prevention policies and safe kitchen technologies, which have drastically brought down the burn incidence.³ In 2004 alone, there were 7.1 million fire related accidental burns in the world.⁴ Among these, 3.1 million people died. Majority of them belonged to low and middle income countries.⁵

Burns are classified in many ways and can be due to a number of causative agents. They include scalds (caused by hot liquids), corrosions, (caused

by caustic chemicals), electrocution (caused by electricity), flame burns (caused by fire). Burns may also occur from electrical heating appliances, friction, hot air, hot gases and lightening. According to severity, burns may be superficial, in that only the top layer of skin is affected. Partial thickness burns entail deeper damage and are characterized by blister formation and tenderness. Full thickness burns involve all the layers of the skin, which becomes white or charred black. There may be little or no pain, as the nerve endings are destroyed. Skin grafting is needed in full thickness burns.⁶

Several epidemiological factors play their role in the causation of burn injuries, due to which the incidence and mode of burn injuries are different in individual communities. Some epidemiological factors known to have an affect are: age, sex, traditions and customs, economic status, environmental and social circumstances.⁷ Burns are one of the leading cause of injury-associated morbidity and mortality.^{8,9} Majority of burn injures are sustained by children.¹⁰ Children are often burnt by contact with flame, hot liquids and household appliances Scalds are the most common burn injuries in younger children. Most of these injuries are preventable.¹¹ This study was undertaken to evaluate the risk factors, causative agents and the nature of injuries, with their subsequent outcome, in burn patients in Rahim Yar Khan District.

Subject & Methods: This was a descriptive study, conducted in the Burn Unit of Sheikh Zayed Medical College, Rahim Yar Khan. This study was conducted from 1st February to 30th September 2010. All the

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patients, irrespective of age and gender, were included in the study. The data was collected regarding patient's age, sex, education, socioeconomic status, residence, causative agents, percentage of burns, nature of injury, body parts affected and outcome. The data was analyzed by SPSS 14.0 version.

RESULTS

There were a total of 109 patients, 56 males (51.4%) and 53 (48.6%) females. Age ranged from 7 months to 70years old (mean 14.30 years \pm 4.31years).

Regarding education level, 72 (66.1%) were illiterate, 19 (16.3%) were having primary education, 7 (6.5%) were having middle education, 9 (8.3%) were matriculates and 2 were graduates (1.8%). Regarding socioeconomic status, majority (79.83%) belonged to low socioeconomic status, 17.43% to middle class and only 2.74% were from upper class.

Majority of the victims, 65 (59.6%), belonged to rural areas and 44 (40.4%) were residents of urban areas.

Table I: Age and Sex distribution of patients (n=109)

Age (years)	Male (n)	Percentage (%)	Female (n)	Percentage (%)
< 10 years	27	24.77	26	23.85
11-20	16	14.67	13	11.92
21-30	9	8.25	10	9.17
31-40	3	2.75	1	.917
41-50	-	-	1	.917
51-60	1	.917	-	
61-70	-		2	1.83
Total	56	51.37	53	48.63

Among the victims, the greatest incidence was in the first three decades of life, with the peak in children. 48.62% patients were up to the age of 10 years and 43.71% (22.92% among the males and 20.79% among the females) were from the ages of 11 to 30 years of age. Only 7.67% were from the ages of 31-70years. HCV was positive in 5 (4.6%) and no one was positive for HBV. Burns were accidental in 98.2% (107) and suicidal in 1.8% (2) cases.

All body parts including head, neck, fore head, chest, trunk, face, eyes, nose, upper and lower limbs were involved in different proportion as shown in table II.

Table II: No. of Cases according to Site of Burn
N=109

Site of burn	Percentage of cases (%)	Site of burn	Percentage of cases (%)
Head	12	Face	21
Neck	14	Ear	6
Fore head	13	Nose	4
Chest	21	Eyes	3
Trunk	11	Lips	4
Anterior	9	Abdomen	19
Back	31	Buttock	20
Upper limb	19	Lower limb	34
Arms	19	Thigh	34
Hand	15	Knees	
Fingers	7	Foot	9

The causative agent was flame in 67 (61.41%) cases, hot liquid in 31 (28.46), electricity in 8 (7.41%), acid in 1 (0.91%) and 2 (1.81%) were burnt due to other chemicals. Among these patients, 33 were children, 34 were students, 18 were house wives, and 7 were old/retired persons.

Table III: Category of patients and Percentage of Different Causative Agents

N= 109

Category	No. of Cases (n)	Aetiology	No. of cases (n)	Percentage
Child	33	Fire and flames	67	61.41
Employed	17	Contact with hot liquids	31	28.46
House wife	18	Exposure to electric current	8	7.41
Student	34	Acid burns	1	0.91
Others	7	Other chemicals	2	1.81
Total	109	Total	109	100%

DISCUSSION

The incidence of burn injuries is high among developing countries, especially those of the subcontinent, mainly because safety measures are inadequately observed in kitchens.¹² The incidence rate of burn cases in Pakistan is more than 210,997 cases per annum, which is in comparison to that of Bangladesh.¹³

During our study period of eight months, 109 cases had reported to hospital for treatment. This may not be the true reflection of the incidence as the incidence in well developed cities of Pakistan, like Islamabad, was less-as depicted in a study conducted at PIMS. There were a total of 429 burn patients admitted over a period of 44 months.¹⁴ A house hold survey was done in Denizli, Turkey to collect the data of burns over a period of 10years. It was found that only 33.3% of the burn sufferers got treatment at health care centers and 66.7% benefitted at home from traditional burn wound care methods.¹⁵ Hence, the occurrence of burn cases are at a much larger scale compared to the reported cases. This less number of cases may be due to the "ice berg phenomenon". Keeping this in consideration, our study may not be a

completely true representation of the population.

In our study, we have seen that children were affected at the largest scale. Up to the age of 10 years, 48.62% children got burn injuries in their homes and kitchens. Our result is congruent with other studies. A cross sectional study of 111 burn cases was conducted in Pakistan Ordinance Factory (POF) Hospital from December 2004 to August 2005, where 37.8% children under the age of ten years were affected.¹⁶ In studies by Mohammadi R and Harahsheh BS, children were the major victims in almost half of the incidents.^{17,18} This increased incidence in children is due to lapses in child supervision, improper storage of flammable substances in the home, low maternal education and overcrowding, to name a few. Furthermore, lack of proper knowledge about the methods of reducing the percentage of burns just by using local available resources also enhances the burn complications.¹⁹

Flame was the main causative agent in our study, causing burns in 67 (61.41%) patients. The second major agent was hot liquid (31 cases). Except for two cases of suicide, almost all of these were sustained accidentally in the kitchen/cooking area. The bulk of the patients were from rural areas where there is no concept of a proper kitchen, with counters. Stoves are placed on the ground and unaware children are increasingly prone to fall onto the stoves, or topple into cooking pots. Our study supports this assumption. A Nigerian study also supports that 55% of the burn injuries were sustained indoors, especially kitchen.²⁰ An analogous study was conducted at Imam Mousa Kazem Burn Hospital, Isfahan, Iran, where 59.5% of 1085 patients were burnt by all causes in the category of flame e.g. kerosene, gasoline, fire, gas.²¹ In 2007, there were 1,557,500 fires in the United States and 17,675 burn injuries occurred. Fourteen thousand (78%) of these were residential fires. Nationwide, every thirty seconds a burn injury occurs in the United States.²²

Out of 109 cases, 85 (77.9%) healed without sequelae, 16 (14.6%) healed with complications and 8 (7.3%) patients expired. Among these, 6 were females and 2 were males. This is most unfortunate, as, except for 2 cases, all the rest were accidental. These accidents could have been prevented, provided proper safety measures had been taken. By large, children should not be allowed into the kitchen, especially when the fire

is burning. Pots containing hot items should be covered with lids and placed out of the reach of children. Corrosive items should be locked in cupboards, where children cannot reach them. General training needs to be given to the people, especially the females, as they are the primary population in charge of the kitchen and supervising children. Appropriate programs should be launched to highlight the techniques of turning out the fire sources and providing first aid to the patient. It should be advised that health centers should be immediately approached according to the need and severity of injuries. Fire extinguishers should be provided and the techniques of using them should be given to all the persons at that work place. Ample resources should be allocated to fire fighting program for having latest equipment and technology. The fire fighters should be well equipped and well trained. The general public should be emphasized that their hurdles on the roads may take the lives of several persons. They can save the precious lives, valuable things and properties just by giving way to rescue teams and vehicles on priority basis.

CONCLUSION

Burns are a major source of morbidity and mortality among the general population and almost all of these injuries are sustained accidentally. By using safe kitchen appliances majority of all burn accidents can be prevented. By providing proper education to the people regarding primary prevention of burns the bulk of this problems be reduced.

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