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Research Article

Epidemiology and outcome of burn injuries in tertiary care hospital of Northern India

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ABSTRACT

Background: Burns represent a serious problem around the world especially in low and middle income countries. The aim of this study was to determine epidemiological characteristics, causes and mortality rate of burn deaths in tertiary care hospital of N India as well as to guide future education and prevention programs.
Methods: A one year cross-sectional study of all burn patients admitted in Dr. RPGMC Tanda, Kangra, Himachal Pradesh, India was conducted between January 2014-December 2014.
Results: Our study revealed that type II (absence of sutural bones) was commoner than type I (presence of type I) asterion. Total of 210 burn injury patients were admitted majority were males[54.5%] and females were [45.5%] males sustained burn injuries mostly at their work place with electric burns whereas females sustained burn injuries at home with cooking appliances.
Conclusions: Burn injuries can be reduced by bringing about regulations to develop safer cooking appliances, promoting less inflammable fabrics to be worn out at home and educating the community especially women.

Keywords: Burn injuries, Mortality, Trauma, Epidemiology

INTRODUCTION

Burn injuries are among the most devastating of all injuries and are a major global public health crisis.[1,2] Burns are the fourth most common type of trauma worldwide, following traffic accidents, fall and interpersonal violence.[3,4] A burn is an injury to the skin or other organic tissue primarily caused by heat or due to radiation, radioactivity, electricity, friction or contact with chemicals. Major burn can be defined as any burn that require intravenous; resuscitation fluid or covers 10% of the body surface area in children and 15% of the body surface area in adults; or burn that involves the airway.[5,6] According to WHO globally there were more than 7.1 million fire related unintentional burns in 2004 giving an overall incidence rate of 110 per 10000 per year, east middle region had 187 per 100,000/year. Lowest incidence was reported in the Americans which was 19 and the highest incidence in South East Asia which was 243 per 10000/year.[8] The WHO estimates that

310,000 people died in fires in 2004, across the world, the great majority being in low income and middle income countries.[9] According to WHO globally 265,000 deaths were reported annually. In India more than 1,000,000 people are moderately or severely burnt every year.[10] Due to burn injuries deaths are only part of the problem, for every person who dies as a result of their burns; many more are left with lifelong disabilities and disfigurements. For some this means living with disability and disfigurement.[11] The cause of burn injuries differ in various communities and understanding this is necessary before preventive action can be planned and implemented. Hence this study was done to understand the epidemiology and outcome of burn injuries.

METHODS

A one year cross-sectional study of all burn patients admitted in Dr. RPGMC Tanda, Kangra Himachal Pradesh India was conducted between January 2014 - December 2014. The data was obtained from Burn unit of surgery department for the purpose of this study. Burn injuries was defined as a body lesions due to an external cause resulting from electrical, thermal, chemical or radiant heat.

RESULTS

A total of 210 burn injury patients were admitted during the study period more than 50% of the patients were male [54.5%] and female patients were < 50% that is 45.5%. Most of the patients were from low income or middle income groups. Mostly male patients sustained burn injuries at their work place and due to thermal & electric burns whereas females sustained injuries mostly at home. Maximum males as well as females were between age group of 21-40 years & had average burn injuries 33.9% and 42.6% respectively. Least burns in both males & females were reported among age group 81-90 years that is 0% in male and 0.95% in female of this group (Table 1). In children of age less than ten years reported burns 26.8% in male children whereas 12.9% in female children (Table 1). Majority of female patients acquire burn at home due to cooking appliances. In males electrical injuries were significantly high but in some cases inhalation injuries were also reported due to thermal injuries. Whereas children mostly sustained burns due to hot water or accidental heat injuries. According to percentage of burn surface area maximum female patients were 60 & had 21-40% burn injuries on the other hand maximum male patients were 50 & had 10-20% surface area with burn injuries. Only two female have shown 81-95% burns (Figure 2). Outcome in burn patients during one year period, total 210 patients reported with burn injuries out of these 155 patients recovered and 55 succumbed to their injuries among 155 recovered patients, 27 patients had shown post burn contractures and disfigurements. Out of 55 mortalities, deaths were reported more in female that is 24 females and 21 males.

Table 1: Showing age and sex distribution of burn patients.

Age	Male		Female		Total
	Number	%age	Number	%age	
1-10	30	26.8%	12	12.9%	42
11-20	15	13%	13.	13.7%	28
21-40	39	33.9%	45	42.6%	84
41-60	30	26.8%	19	20%	49
61-80	1	0.87%	4	4.2%	5
81-90	0	0%	2	0.95%	2
Total	115	100	95	100	210

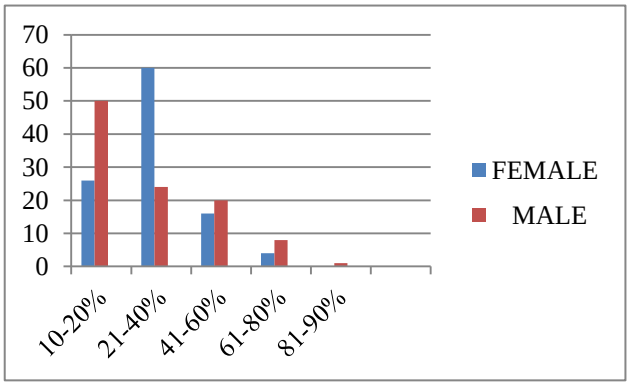

Figure 1: Distribution of burn patients according to sex and total burn surface area.

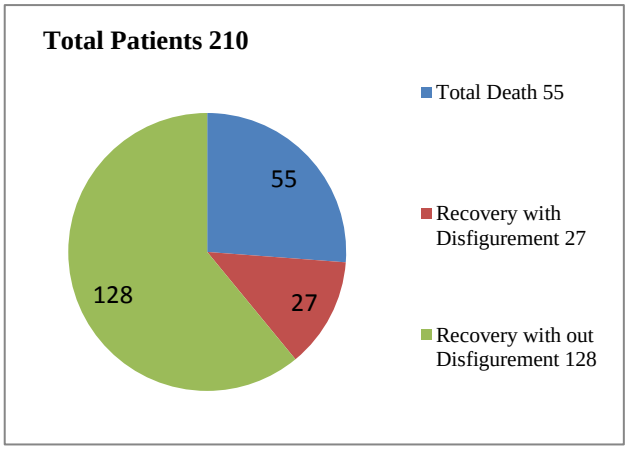

Figure 2: Outcome of burn patients.

DISCUSSION

Epidemiological studies are a pre-requisite for effective burn prevention for effective burn programs as each population seems to have its own epidemiological characteristics. In the present study majority of the patients both male and female were in the age group of 21-40 years. Mostly males sustained injuries at their work place with thermal& electric burns. Hence there is need to educate people those are engaged in such professions for their own safety. Majority of female patients of this age group sustained burn injuries at home during

cooking. These results are very much similar to other studies, suggest that one's own home can become a death trap, as heat generating appliances are regularly used at home.[12-17] It is also noted that majority of Indian females wear loose flowing synthetic garments which indicates caution needed when using equipment causing burns .Flame was the most common agent in most of the female burn patients and similar results have been seen in various studies.[18-20] These findings indicates that woman should be guided properly for safe use of cooking appliances. In this study most of the children sustained burns with hot water. Hence there is a necessity of education with regard to emergency steps at the time of an incident. In this study maximum number of male female victim had total burn surface area between 21-60% and indicates the need for aggressive measure to decrease the mortality due to burns.

CONCLUSION

This is a first step study in researching epidemiological features of burn injuries. The public health strategies should be oriented towards community awareness about this kind of injuries, and to teach masses about risk factors and first aid. Hence burn injuries can be reduced by bringing about regulation to develop safer cooking appliances, promoting less inflammable fabric to be worn at home and educating the community for safer first aid practices after sustaining burns.

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