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The Epidemiological Profile of Burn Patients in a Tertiary Care Hospital

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Abstract
Background: *Burn is a global health problem. The epidemiology varies in different parts of the world. Burn Patients go through not only physical trauma but also psychological. Significant mortality and morbidity is seen in burn patients if proper treatment is not done on time. Knowledge about the cause of burn is important to prevent such incidences.*
Materials & Methods : *A prospective study was conducted in the Burn Unit Department of Plastic Surgery, Christian Medical College and Hospital, Ludhiana in period between May 2012 to April 2013. A total of 103 burn patients were studied. All types of Burn patients were included from OPD and emergency department after an informed consent. All those who were not willing for participation in the study were excluded.*
Results & Conclusion : *In this study it was noted that males and females were equally effected with mean age of 29.3 years. The most common mode of injury in our study was industrial flameburns followed by accidental . Maximum patients had 11-20% TBSA burns which included 19.4% of the patients. 37.9% of the patients were discharged after complete treatment. 59 patients were conservatively managed followed by surgery in 44 patients. 96 patients presented with fresh burns & 7 patients had old burns.*
Key Words: *Burn Epidemiology, Burn Etiology, Mortality.*

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I. Introduction

Burn is major global health problem (1). The epidemiology varies in different parts of the world. Burn Patients go through not only physical trauma but also psychological. Significant mortality and morbidity is seen in burn patients if proper treatment is not done on time. Knowledge about the cause of burn is important to prevent such incidences. Much has been done in developed countries but in developing countries financial restraints comes in a way. The survival rate of patients with burns in India is approximately 50% for burns involving < 40% of TBSA (2). If one is aware of the etiological reasons associated with the occurrence of such problems effective intervention can save many lives. Burns still pose a threat to humanity and a continuous insight into this problem is always needed.

Aims & Objectives: To study the epidemiological profile of burn patients in a tertiary care hospital.

II. Material & Method

The study was conducted in the Burns Unit, Department of Plastic Surgery, Christian Medical College and Hospital, Ludhiana in period between May 2012 to April 2013. A prospective study of 103 patients was done.

Selection of cases
Inclusion Criteria:
1. Patients with Flame Burns
2. Patients with Electric contact and flash burns
3. Patients with Chemical Burns
4. Patients with Hot water/ liquid scald burns

Exclusion Criteria
1. Patients not willing for participation in the study.

III. Observations & Results

A total of 103 patients of Burns presenting in our hospital from May 2012 to April 2013 were included in this study. Detailed history was taken and physical examination was done. Routine investigations were done. Wound swabs cultures and Tissue cultures were taken in all patients. The various microorganisms isolated and their antibiotic sensitivity patterns were noted. Following observations were made.

Distribution according to Gender. Out of 103 patients, 53 (51.5%) were male and 50 (48.5%) were female patients.(Table 1)

TABLE 1: DISTRIBUTION OF PATIENTS ACCORDING TO GENDER

Gender	No of Patients	Percent
Male	53	51.5
Female	50	48.5

Distribution according to Age: Mean age of the patients was 29.3 years with range of 6 months to 85 years. Maximum number of patients (26) were in the age group of 21-30 years, with 22 patients between 31-40 years, 19 patients between 11-20 years, 14 patients between 0-10 years, 13 patients between 41-50 years, 7 patients between 51-60 years and only 2 patients were >60 years of age.(Table 2)

TABLE – 2: DISTRIBUTION OF PATIENTS ACCORDING TO AGE

Age	No of patients	Percent
<10y	14	13.6
11-20y	19	18.5
21-30y	26	25.2
31-40y	22	21.4
41-50y	13	12.6
51-60y	7	6.8
>60y	2	1.9

c) Distribution according to Mode of Injury

Mode of injury causing Burns was established on the basis of History and Examination. (Table3)

TABLE- 3: DISTRIBUTION ACCORDING TO MODE OF INJURY

Etiology	No. Of Patients	Percent
Flame Burns	66	64.1
Electric Contact Burns	13	12.6
Electric Flash Burns	4	3.9
Chemical Burns	2	1.9
Scald Burns	18	17.5

d) Distribution according to Percentage of Burns

Distribution according to the percentage of Burns was done on the basis of Clinical Examination. (Table4)

TABLE- 4: DISTRIBUTION ACCORDING TO PERCENTAGE OF BURNS

Percentage of Burns (% TBSA)	No. Of Patients	Percent
<10	11	10.7
11-20	20	19.4
21-30	15	14.6
31-40	12	11.7
41-50	8	7.8
51-60	11	10.7
61-70	7	6.8
71-80	7	6.8
81-90	7	6.8
91-100	5	4.9

Mean TBSA involved was 42.6%.

e) Distribution according to Depth of Burns

Distribution according to depth of Burns amongst the 103 patients admitted in Burns Unit. (Table 5)

TABLE- 5: DISTRIBUTION ACCORDING TO DEPTH OF BURNS

Depth of Burns	No. Of Patients	Percent
First degree	2	1.9
Second degree	36	35.0
Third degree	65	63.1

IV. Discussion

A total of 103 patients of Burn presenting in our hospital from May 2012 to April 2013 were included in this study. Detailed history was taken and physical examination was done. Wound Swab cultures and tissue culture were taken in all patients. The various microorganisms isolated and their antibiotic sensitivity were noted. The results were statistically analyzed and compared to those of previous studies.

In our study patients between the age of 6 months to 85 years were studied. The age group most affected was 21-30 years of age. The mean age was 29.3 years. People in these age groups are more active and outgoing than the other groups & hence more prone to burns. This was comparable to the study done by 'Chakraborty S etal 2010(3)where mean age 20-39 years was 56.6 % and 33.6 years mean age of burn patients by study done by Iqbal T2 etal 2013 (4).

In our study out of total 103 patients 51.5% patients were Males and 48.5% were females; with M:F ratio of 1:1. Males being the bread earner of the family are outgoing & more prone to burns at workplace. In India female burns are mostly due to domestic violence or dowry. Similar results were found in study done by Iqbal T etal 2013(4) with Male preponderance of 56.4% and the results are in contrast with the study done by Chakroborty S etal 2010(3) where females burnt were 61.5%. The most common mode of injury in our study was Flame Burns accounting for 64.1% which is statistically significantly higher than all other causes. Second most common in our study was scald burns(17.5%), followed by electric contact burns(12.6%); electric flash burns (3.9%) and chemical bunrs (1.9%). Similar results were seen by study done by Gabbe BJ et al 2011(5)were flame burns constituted 72%. Contrast results were seen in study done by Iqbal et al 2013 (4) where scalds burn constituted the highest number 42.5%.

In our study maximum number of patients were in the range of 11-20% TBSA (19.7%) and minimum number of patients (4.9%) were in the range of 91-100% TBSA. Mean TBSA involved was 42.6%, In study by Iqbal et al 2013 (4), the mean TBSA involved for the hospitalized subset of burn patients was 38.4%. In study by Chakraborty S et al2010(3) 25.3% of the patient had burns between 20-30% TBSA. In contrast to our study 21.7% burns were >,80% TBSA flame burns.

The majority of patients admitted in the burn unit had third degree burn(63.1%) followed by second degree (35%). Only 1.9% patient had first degree burns; which were managed on outpatient basis & hospitalization was not required.93.2% of patients in our study had fresh burns. Only 6.8% of the patients had old burns, initially managed at Home or at primary level Health Centres.57.3% of patients were conservatively managed while 42.7% patients were operated upon as per Surgeon's decision in accordance with various clinical criteria.

In our study, burns due to industrial accidents/occupational accounted 60% of the total admissions followed by burns at home which included 34% followed by suicidal burns which were 6%. Our study is in contrast to the study done by Halk J. et al 2007 (6) where 58% of the burns was sustained at home. But our study has results similar to the study done by Song C. et al 2005 (7) where occupational burns accounted for the highest number of admissions. Ludhiana being an industrial area, most of the workers working in the factories without proper setups to protect themselves from such incidences can be the prime cause of occupational burns. Mushrooming of small scale industries without proper setups and safety equipment's has led to such dreadful incidents. We need to work on this area so that major fire breaks can be prevented. Majority of the patients had burns after blast furnace, so proper maintenance of the machinery is needed to prevent such incidences in the future.

V. Summary & Conclusion

Burns are one of the most common and devastating forms of trauma leading to significant mortality and morbidity. Survivor lives in psychological agony. Most of the time, such incidences are preventable and insight into the pattern of injury is required so that effective preventive measures can be taken. A total of 103 patients of Burns presenting in our hospital from May 2012 to April 2013 were included in this study. Detailed history was taken and physical examination was done. Routine investigations were done. Following observations were made:

- Maximum number of patients belonged to the age group of 21-30years.
- Mean age of patients was 29.3 years.
- Male : Female ratio was approximately 1:1
- The most common mode of injury in our study was Flame Burns, accounting for 64.1% of the cases.

- Maximum number of patients (19.7%) had burns in the range of 11-20% TBSA.
- Mean TBSA involved was 42.6%.
- The majority of patients admitted in the burns unit had Third degree Burns (63.1%), followed by Second degree burns (35%).
- The majority of the patients (93.2%) had fresh burns. Only 6.8% of the patients had old burns.
- 57.3% patients were conservatively managed while 42.7% patients were operated upon.
- 60% of the patient sustained occupational/ industrial burn, 34% of the patients sustained burn at home due to kerosene oil, stove blast, LPG gas leak. 6% of the patients had suicidal burns reason being stress among the family member.

Conclusion: Burn injuries carry a significant morbidity and mortality. In this study we noted that males and females were almost equally affected and mean age was 29.3 years. The most common mode of injury in our study was Flame Burns. The majority of patients admitted had Third degree Burns and fresh burns. Silver Sulfadiazine ointment was most commonly used for dressing.

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