

# A study of the cases of fatal burn injuries in tertiary care hospital, Assam – autopsy based study

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## Abstract

Death due to burn injury constitutes a major portion of the cases brought for autopsy to the Department of Forensic Medicine, Silchar Medical College, Silchar, Assam. A proper study of these cases is the need of the hour to arrive at a proper conclusion as to the contributing factors leading to such misshape and also to prevent its occurrence, formulate treatment protocol and also to have an effective counselling system. A retrospective study of such cases at autopsy carried out from 1st Jan, 2012 to 31st Dec, 2012 in the Department of Forensic Medicine, Silchar Medical College, Silchar to find out the trends of burns injuries in this southern part of Assam. Out of 654 medico-legal autopsy carried out in the Department, 88 cases were death due to burn injuries. The commonest age groups of victims were in between 13-25 years. Females were mostly affected. Married cases are more than unmarried. Majority of cases was from rural areas. Maximum cases died due to septicaemia.

**Keywords:** Burn, Septicaemia, Rule of Nine

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## INTRODUCTION

Exposure of living tissue to high temperature causes damage to cell, extent of which is the function of temperature to which the tissues are exposed and the length of time of that exposure. The use of controlled fire has played a very important role in the evolution of the mankind. There are enough evidence to prove that man's predecessor, Homo erectus learnt to control fire and hence used about a million years ago. Hence fire has always been important in society both for its constructive as well as destructive potential. Death due to burn is an important cause of unnatural death commonly encountered in medico-legal practice. In a developing

country like India, burn injuries continue to be a challenging problem due to poor medical facilities, lack of specialist doctors, and absence of public awareness. Traditional cooking practice, lack of awareness of safety measures, careless use of household fuels mostly contribute to the accidental burn injury whereas easily available of inflammable substances the choice for suicidal as well as homicidal burn injuries.

## AIMS AND OBJECTIVE

- To find out the circumstances leading to death due to burn injuries.
- To find out the relationship between surface area of burn, period of survival and cause of death.
- To identify risk factors and formulate preventive measures in relation to death due to burns.
- To find out a correlation between various demographic factors relating to such deaths I the District of Cachar, Assam

## MATERIAL AND METHODS

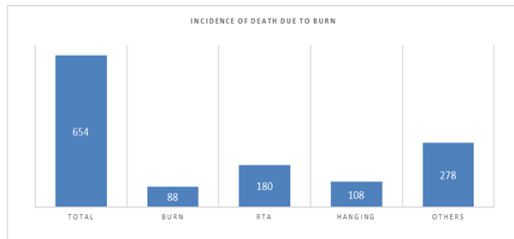
Out of all cases sent for autopsy to the Dept. of Forensic Medicine, Silchar Medical College, Silchar, the in the year 2012 (i.e. from 1st January 2012 to 31st December 2012), the cases where the death was primarily or secondarily due to burn injury were selected for the study.

This comprises all such deaths in the District of Cachar, Assam in the year 2012 as Dept. of Forensic Medicine, Silchar Medical College, Silchar has jurisdiction of carrying out autopsy of Cachar District only. Out of a total of 654 cases, 88 cases came out to be death due to burn injury and were taken into consideration for collection of the data available in police forwarding letter, dead body challan, inquest report and the autopsy report concealing the identity of the cases to avoid any conflict of interest. On the basis of data analysis and observation, results were drawn and discussed. Rule of Nine was used to calculate the percentage of burn injury.

**Analysis and Observation**

**Table 1: Incidence**

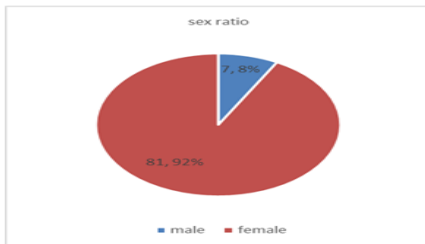
Total Cases	Burn Cases	RTA	Hanging	Others
654	88	180	108	278



**Figure 1: Incidence**

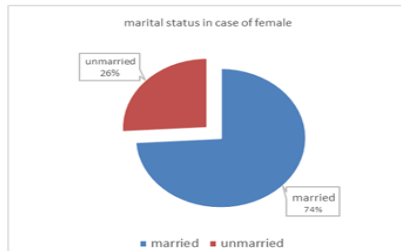
**Table 2: Sex Ratio**

Sex	No. of Cases
Male	7
Female	81



**Table 3: Marital Status of Female victims**

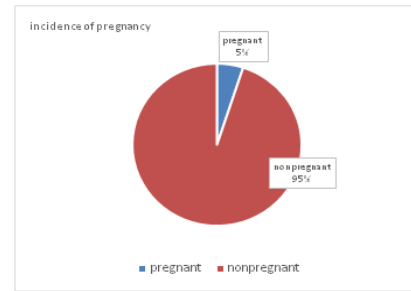
Married	Un-Married
60	21



**Figure 3: Marital Status of Female victims**

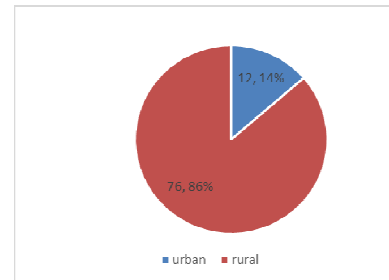
**Table 4: Ratio of pregnant and non-pregnant women**

Pregnant	Non-pregnant
3	57



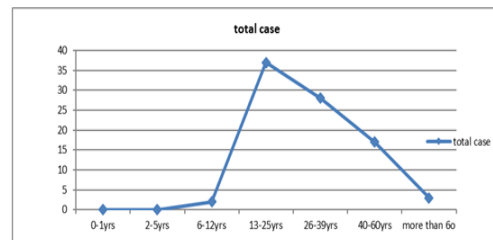
**Table 5**

Rural	Urban
76	11



**Table 6: Age distribution**

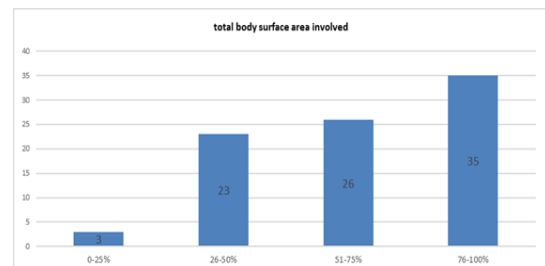
Age	0-1yrs	2-5yrs	6-12yrs	13-25yrs	26-39yrs	40-60yrs	>60yrs
No. of cases	0	0	3	37	28	17	3



**Figure 6: Age distribution**

**Table 7: Extent of Burn**

Total Body Surface Area Involved (TBSA)	0-25%	26-50%	51-75%	76-100%
No. of cases	3	23	26	35

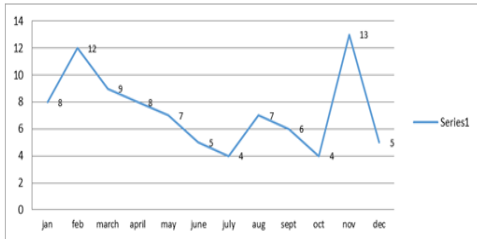


**Table 8:** Extent of Burn in relation to sex

%TBSA	MALE	FEMALE	TOTAL
0-25%	1(14.2%)	2(2.3%)	3(3.4%)
26-50%	2(28.6%)	21(25.9%)	23(26.1%)
51-75%	2(28.6%)	24(29.6%)	26(29.5%)
76-100%	2(28.6%)	33(40.7%)	35(34%)
<b>TOTAL</b>	<b>7(8%)</b>	<b>81(92%)</b>	<b>88(100)</b>

**Table 9:** Seasonal variation

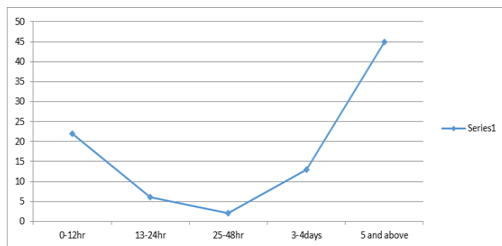
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
8	12	9	8	7	5	4	7	6	4	13	5



**Figure 9:** Seasonal variation

**Table 10:** Period of survival

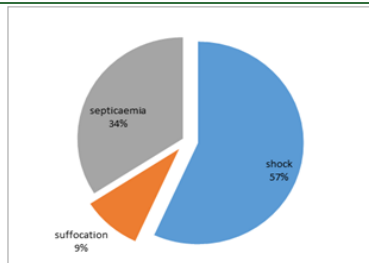
Survival period	0-12hrs	13-24hrs	25-48hrs	3-4days	≥5days
No of cases	22	6	2	13	45



**Figure 10:** Period of survival

**Table 11:** Cause of death

Cause of death	shock	Septicemia	Suffocation
No. of case	50	30	8



**Figure 11:** Cause of death

## RESULTS

Table no 1 to 10 show distribution of cases under various category. In the year 2012, out of a total of 654 cases, 88 cases were burn injury i.e. 13.8%, which is less than RTA (27.5%), similar finding were also seen by Harish Dasai *et al*<sup>1</sup>. Age of occurrence varied from 6 yrs. to 78 yrs., where the peak incidence was noted in the age group of 13 to 25 yrs. (42%), followed by 26 to 39 age group

(31.8%), extreme age groups are affected less finding consistent with study of Gonnade *et al*. Regarding sex, it was observed that the females are far more prone to burn injury. Out of the 88 cases, 81 cases i.e. 92% were females and the male-female ratio was 1:12 approximately, similar finding was observed by Gonnade *et al*. Amongst the female cases, the married ones outnumbered the unmarried with 74% cases being married, similar finding were observed by Dillon *et all* in their study. Maximum cases were from rural areas i.e. 86.4%. Regarding season-wise distribution, winter season recorded the maximum i.e. (28.4%), followed by autumn (26.2%) and minimum during summer (16%) In regard to extent of Total body Surface Area involvement , the maximum cases were found in range of 76-100% with 39.77% out of which 94% were women , followed by in the range of 51-75% with 29% cases similar finding also found by gonnade *et all*. Regarding cause of death, maximum cases died due to shock (57%), followed by septicemia (34%), followed by suffocation (9%)

## CONCLUSION

Despite an immense advance in technology, medical care, burn injury is still posing a significant threat to the society. Illiteracy, poverty, lack of public awareness and most importantly inaccessibility of quality health care for every section of society make this problem more miserable in India. Dowry practice that prevalent in some parts of India that again add to the magnitude of the problem at large, where females are the primary victims. Hence a integrated approach is needed to reduce this problem in society. Regarding Dowry Death autopsy surgeon has a great role to play by providing required information regarding various queries to the investigating authority so that guilty can be punished.

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