

# Study of Unnatural Death Due to Fatal Burn in Female in Varanasi, India

Dr. Awdhesh Kumar

M.D (Resident 3rd Year), Department Of Forensic Medicine And Toxicology, Institute Of Medical Sciences, Banaras Hindu University, Varanasi, India

**Abstract:** *Introduction: Man has invented fire since time immortal. Burn deaths have tremendous medico-legal importance as they may be considered to be the commonest cause of unnatural deaths in India. Aim of the study: To highlight problem and to find out how dry thermal burn affect epidemiological factors and its medico legal consequence. Material and methods: The present retrospective study has been conducted for the period of 5 consecutive years from 2009 to 2013 based on autopsy of the unnatural death cases resulting from burn in female. During study period total no. of unnatural Death cases was 10195 and death due to female burn injuries was 1488 in number. These cases brought to the Department of Forensic Medicine, IMS, BHU, Varanasi. Result: Thermal burn injuries were averaging 18.65%. Female burn deaths dominated over male in the ratio of 3.52:1 (77.86%) and (22.14%) respectively. Predominant age group found to be 21-30 years (48.72%) followed by age group 11-20 showing (23.11%). Most of the deceased were from the married group (81%) followed by unmarried (17%). Manner of burn death was unknown in most of the cases i.e. (97%), may be suicidal or accidental followed by accidental burn deaths (2.50%). Involvement of rural population is more i.e. 93% than urban population (0.94%). Religion wise Hindu (97%) predominated over other religions. Conclusion: Female fatal burn significantly affects community and can prevent it.*

**Keywords:** Forensic medicine; Female burn death; Unnatural death; Dowry death.

## 1. Introduction

Man has invented fire since time immortal. The use of fire in various aspects has not only added to his comforts but also added to his misuses by increasing the risk of burns. Fire was perhaps man's first double-edged sword, evidenced throughout history; it has served as well as destroyed mankind<sup>1</sup>. Burn injuries are dry thermal injury caused due to contact with dry heat such as flame, radiant heat or some heated solid substance like metal or glass, to the body surface<sup>2</sup>. Mammalian tissue can survive only within a relatively within narrow range of temperature, 22-44 °C<sup>3</sup>. Thus burning usually occurs due to contact with flame it may be caused due to contact with hot metal or any other hot solid or hot liquid. The severity of burning very extremely depending on the degree of heat, period of exposure, intensity of heat and age of the person. Burn deaths have tremendous medico-legal importance as they may be considered to be the commonest cause of unnatural deaths in India. Often, the manner of burns is closed in mystery, and unreliable statements. The reason behind this action may be personal, domestic, occupational or social tragedy and more recently dowry deaths. Married female burn death where death of female occurs below 30 year and within 7 years of her marriage such death cases investigated by Magistrate under Cr.P.C 176 (Dowry death) and other female burn and male burn deaths as routinely investigated by police as per section 174 of Cr.P.C. In India below 7 year married female burn deaths are linked with Dowry death, where a young married women attempt or commits suicide in consequent to their being subjected to harassment by their husband or in-laws or his relative or cruelly constitute the offence of Dowry death, a monstrous social evil is widely prevalent and deep rooted in society in spite of most of the awareness programmers but this is due to adequate legal system but her implementation and administration are not stringent<sup>4</sup>. Autopsy has previously been shown to be a useful

retrospective diagnostic tool; however we challenge its reliability as a result of our study<sup>5</sup>. Social Forensic Message -Safety first in fire situations and always x-ray burnt human remains. Scene Visit-As indicated and felt necessary and crime Scene evaluation report by Police as necessary<sup>6</sup>. A burn injuries death is very painful but what compels or in what circumstances women or men commits suicide or homicide or those accidentally burned but most heinous is burning of newly married women i.e. homicidal burning. In this respect it is very difficult to find out the manner (Suicidal, Accidental and Homicidal) of burn injuries that in what circumstances the burn injuries took place, it can only be possible by meticulous investigation of scene of crime and interrogation of person concerned.

## 2. The Aim of the Study

To find out how dry thermal burn affect incidence, age, sex, habitat, marital status, religious, manner of death and its medico legal consequence.

## 3. Material and Method

Present retrospective study was carried out on the unnatural burn death cases brought by police to the Department of Forensic Medicine, Institute of Medical Sciences, Banaras Hindu University, from Varanasi itself and nearby districts and western part of Bihar and Madhya Pradesh for treatment then if death at Varanasi in different hospital occur then the dead body after inquest send to institute of medical science Banaras Hindu university for medico-legal autopsy examination. Study data was collected from autopsied record register for the duration from 1<sup>st</sup> January 2009 to 31<sup>st</sup> December 2013. During this period total of 1911 burn death cases were recorded out of 10215 medico-legal postmortem conducted. Data was analyzed retrospectively in respect of incidence of burn deaths in 5 year consecutive year, age

group, sex habitat of death religion factor, manner of death and other relevant data.

#### 4. Results and Observation

**Table 1:** If we distribute the finding year wise cases of the total unnatural deaths and thermal burn death reported during the 5 year study period from 2009 to 2013 deaths due to burn injuries were 17.82%, 17.70%, 17.83%, 20.56%, 19.49%, respectively (and average 18.65% per year) showing the more or less steady trend and which is almost static. This table also shows that total thermal burn death 1911 which is 18.71 % of total autopsy 10215 was conducted. **Table 2:** Male comprised of 22.14% of total burn death. Female (77.86%) preponderance was seen in burning with male female ratio equal to 1:3.52. **Table 3:** Maximum of the victims of burn deaths were in the age group 21-30 year followed by 31-40 years in the 5 year. Most of the victims of burn deaths were recorded at 21-40 year (which is more than half of the total burn death) with peak incidence at 21-30 year 48.72%. Extremes of ages are least involved as compared to adult age group as seen in tables for age and sex incidence. **Table 4:** Describe the marital status of the studied victim showing married female (81.13%) outnumbered the unmarried female (17.27%), in male unmarried 8.51% outnumber the 0.47 % married male. **Table 5:** Regarding marital status and manner of death most of the victims died of unknown manner (83.31%) and are married followed by unmarried group (12.27%). Accidental unmarried (51%) than accidental married (1%), homicidal, suicidal are not differentiated. **Table 6:** show regarding manner of death 96.86 % case are unknown manner, accidental 2.98%, suicidal 0.10% and homicidal 0.05%. **Table 7:** Show that majority of studied victims like 92.78% were from rural area, 6.49% are from urban area and 0.73% case for which locality is unknown. **Table 8:** Show that majority of the burn victims death of the studied case like 96.70% were Hindu and 2.7% are Muslims but 0.57% of unknown case and their religions' are not known.

#### 5. Discussion

**Table 1:** Incidence of burn death on the basis of 5 consecutive year 2000 to 2013 among cause of total death 10215, death due to burn 1911 which is 2<sup>nd</sup> most common cause of death after road traffic accident, it is due to more contact with heat. Other study also similar to this that says burn is major cause of death<sup>7</sup>. **Table 2:** Analysis of sex record in present study showed that female (77.86%) superseded than male (22.14%) i.e. male: female ratio 1:3.52, other study similar to this that female predominate than male<sup>7, 11, 12, and 13</sup>. Another study contrast to this i.e. male predominates than female<sup>8</sup>. As the female burn deaths reported to Police irrespective of its manner and registered under 304B IPC (Dowry death) all the family members of in-laws side alleged in causing death of female are arrested and send to jail<sup>9</sup>. **Table 3:** In our study 21 to 30 year is the most common cause of burn death (46%) followed by 21 to 11 year (21%) with preponderance of female other study find with similar result<sup>7, 10</sup>. The high mortality in this age group 21 to 30 year can be due to young adolescent in this age group fail to stand the stress of examination and job failure. **Table 4:** our study find that married female burn

death more common than unmarried females and males other study also find similar result i.e. housewives more common<sup>7, 12</sup>. **Table 5 and 6:** Among known manner of death accidental manner more common than other homicidal and suicidal which are very less number, other study also finds the same result<sup>14, 15, 16</sup>. Regarding manner of death most of the case are unknown manner and homicidal, suicidal and accident are less number because no adequate criteria for such differentiation during autopsy but they can be differentiated by investigation and inquiry of case regarding fact. **Table 7:** In our study most of the burn death from rural locality (92.78%) than from urban locality other study also find that rural burn death predominant than urban<sup>14</sup>. But another study contrasts to this and show that urban area much more common than rural<sup>7</sup>. **Table 8:** I also find that majority of the burn death victim of the studied case is Hindu and only 2.72% belong to Muslim reason behind it is the Hindu dominant population. These finding confined to other study<sup>10, 16</sup>.

#### 6. Conclusion

- Dry thermal burn death is the 2<sup>nd</sup> most common cause of death after road traffic death.
- Male female ratio is equal to 1:3.52.
- 21 to 30 year is the most common cause of burn death (46%) followed by 21 to 11 year (21%) .
- Married female burn death more common than unmarried females.
- Regarding manner of death most of the case are unknown manner and homicidal, suicidal and accident are less number.
- Majority of studied victims like 92.78% were from rural area.
- Majority of the burn victim's death on the studied case i.e. 96.70% were Hindu.

#### 7. Acknowledgement

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#### 8. Funding Source

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#### 9. Ethics Statement

The present study was approved by "Institutional Ethics Committee" of Institute of Medical Sciences, Banaras Hindu University. All the information has been taken under consideration of medical ethical committee.

#### 10. Conflict of Interest

Nil

**11. Table**

**Table 1:** Incidence of burn deaths in Medico-legal autopsy on the basis of 5 consecutive years:

Year	Total autopsy case	%	Thermal Burn Death	%
2009	1986	19.44	354	17.82
2010	2045	20.01	362	17.70
2011	1974	19.32	352	17.83
2012	2081	20.37	428	20.56
2013	2129	20.84	415	19.49
Total	10215	100	1911	100

**Table 2:** Distribution of burn case in gender on the basis of 5 consecutive years:

Year	Male	%	Female	%	Total
2009	101	23.88	252	16.94	353
2010	69	16.31	293	19.69	362
2011	70	16.55	283	19.02	353
2012	99	23.4	329	22.11	428
2013	84	19.86	331	22.24	415
Total	423	22.14	1488	77.86	1911

**Table 3:** Distribution of burn case in different age group and gender in 5 year:

Age in years	Male	%	Female	%	Total	
					NO.	%
0-10	20	5%	44	2.6	64	3
11-20	62	15%	344	23.11	406	21
21-30	158	37%	725	48.72	883	46
31-40	101	24%	244	16.39	345	18
41-50	41	10%	66	4.43	107	6
51-60	23	5%	26	1.74	49	3
61-70	14	3%	24	1.61	38	2
71- above	4	1%	15	1	19	1
Total	423	100%	1488	100	1911	100

**Table 4:** Marital status of burn death cases in year 5 consecutive year:

Marital Status	Male	%	Female	%	Total	%
Married	2	0.47	1207	81.13	1209	63
Unmarried	36	8.51	257	17.25	293	15
Unknown	385	91.01	24	1.62	409	21
Total	423	100	1488	100	1911	100

**Table 5:** Distribution of burn death case associated with marital status and manner of death:

Marital status	Manner							Total	
	A	%	H	N	S	U	%	NO.	%
Married	1	2	0.00	0.00	0.00	1208	65	1209	63
Unmarried	51	89	0.00	0.00	0.00	242	13	293	15
Unknown	5	9	1	0.00	2	401	22	409	21
Total	57	100	1	0.00	2	1851	100	1911	100

Note: A=Accidental; H=Homicidal; N=Natural; S=Suicidal; U= Unknown.

**Table 6:** Distribution of burn death case on the basis of manner of death:

Manner	Frequency	%	Male	%	Female	%
Accident	57	2.98	20	4.73	37	2.49
Homicidal	1	0.05	1	0.24	0	0.00
Suicidal	2	0.1	2	0.47	0	0.00
Natural	nil	nil	0	0.00	0	0.00
Unknown	1851	96.86	400	94.56	1451	97.51
Total	1911	100	423	100.00	1488	100.00

**Table 7:** Distribution of burn death case associated with habitat:

Habitat	Frequency	%	Male	%	Female	%
Rural	1773	92.78	387	91.49	1386	93.15
Urban	124	6.49	28	6.62	96	6.45
Unknown	14	0.73	8	1.89	6	0.40
Total	1911	100	423	100.00	1488	100.00

**Table 8:** distribution of burn death case associated with religions:

Religious	Frequency	%	Male	%	Female	%
Hindu	1848	96.7	401	94.80	1447	97.24
Muslim	52	2.72	15	3.55	37	2.49
Christian	nil	nil	0	0.00	0	0.00
Unknown	11	0.58	7	0.58	4	0.27
Total	1911	100	423	98.92	1488	100.00

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