

Trends & Pattern in Unnatural Female Death Cases Due to Burn: A One Year Retrospective Study

Manjit Nayak¹, Saumil Merchant², Kalpesh Shah³

¹Tutor, (PhD Scholar-Gujarat University) Department of Forensic Medicine & Toxicology, B.J Medical College, Ahmedabad, ²Professor & Head, (PhD Scholar-Gujarat University) Department of Forensic Medicine & Toxicology, AMC MET Medical College, Ahmedabad, ³Professor & Head, (PhD Guide-Gujarat University) Department of Forensic Medicine & Toxicology, B.J Medical college, Ahmedabad

Abstract

Burns are the injuries that are produced by application of dry heat such as flame, radiant heat or some heated soiled substance like metal or glass from the surface of the body resulting in tissue destruction. According to WHO estimates about 2,65,000 deaths occur each year from fires alone globally, with more deaths from scalds, electrical burns, and other forms of burns for which data are not available. The majority of these deaths occur in low- and middle-income countries, with almost half occur in the WHO South-East Asia Region. In India around 7 million people suffer from burn injuries each year with 1.4 lakh deaths and 2.4 lakh people suffer with disability. Burn death rates have been decreasing in high income countries.¹ Burn injury are higher in females than males. The higher risk for females is associated with open fire cooking, or unsafe cook stoves, loose clothing. Self-directed or interpersonal violence is also a factor for burn injuries. The present study is retrospective study which was carried out in the Department of Forensic Medicine and Toxicology at B. J. Medical College and Civil Hospital, Ahmedabad during the period from January 2018 to December 2018 to determine trends & pattern in unnatural female death due to burns cases and their practical approach to shrinkage the incidence of female burns cases as much as possible. In study we come across some particularized factor which exaggerated the recent condition in the society. The various facets are investigated and conferred in specifics.

Keyword: *Unnatural female death, thermal injury, Septicemia*

Introduction

Burns are a critical public health problem, causing deaths, disability and disfigurement. Globally, there are about 300,000 deaths due to burns every year. Of these, 95% take place in developing countries with Southeast Asia recording nearly 57% of deaths due to burns.¹ World Health Organization (WHO). A who plan for burn prevention and Care. 2008; WHO: Geneva.² Extrapolation of data from major hospitals indicates an estimation of 7 million burn incidents in India each year, making burn injuries the second largest group of injuries after road accidents. In 1998, India was the only country in the world where fire was among the 15 leading causes of death, according to WHO.³ However, the Government of India has not put in place a national injury surveillance system, hence the exact incidence of burn-related morbidity and mortality is not known. In 2010, the Government of India announced the National

Programme for Prevention of Burn Injuries (NPPBI) which aims at prevention, burns injury management and establishment of a central burn registry, but its impact is not yet noticeable.⁴ A study of women's health priorities based on the 2004 mortality estimates and disease burden of the WHO Global Burden of Diseases Study found that burns in young women were common in Southeast Asia, with it being the third cause of death for women aged 15–44, followed by self-inflicted injuries.⁵ Burn-related injuries and deaths amongst women in India are likely to be caused by: kitchen accidents related to use of kerosene and flammability of garments; self-immolation or suicides; and homicides related to domestic violence. Evidence suggests that domestic violence (physical, sexual and emotional), which is widespread in India, could have an important role in these burn injuries.⁶

The NCRB records show 122,877 cases of violence by husband or relatives, 8,455 dowry deaths and 2,233 suicides among women due to dowry harassment in 2014.⁸ National Crime Records Bureau, Ministry of Home Affairs, Government of India. Crimes in India and Accidental Deaths & Suicides in India. 2014.⁷ The NCRB data is based on cases registered with the police and these numbers are therefore grossly underreported and may not provide accurate data on burn injuries. A burn injuries death is very excruciating but what compels or in what surroundings women 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.

Aims & Objective

To find out burn affect in respect to sex, religion, season, time of incidence, marital status, total body surface area distribution (TBSA), Duration of survival, alleged history, manner & cause of death wise distribution and Its medico-legal consequence.

Materials & Method

This study was carried out in the Department of Forensic Medicine and Toxicology at B. J. Medical College and Civil Hospital, Ahmedabad during the period from January 2018 to December 2018. The Proforma of the study was prepared and numerous information and conclusions were collected & analysed from Post-Mortem report records & hospital data records. Data has been analysed in respect to sex, religion, season, time of incidence, marital status, total body surface area distribution (TBSA), Duration of survival, alleged history, manner & cause of death wise distribution. The details were accumulated, tabulated, discussed & concluded.

Observations & Result

Total 3930 Autopsy were conducted in B.J Medical college, Ahmedabad during during the period from January 2018 to December 2018 among them 816 (20.76%) cases are unnatural female death cases.

Unnatural Female death cases due to burn(Thermal injury)(64.25%) are near to double than the unnatural death cases due to burn male death (35.75%) cases. It shows the definite crucial factor in gender-biased in the society. Religion wise distribution of burn female cases shows more incident in Hindu Female(48.81%), and Muslim Female(39.89%) than others. Hence highest in the Hindu religion among all. Unnatural burn(Thermal) injury cases are more predominant in winter(Nov-Feb) (46%)& Summer(March-June)(40%) than in rainy season(July-Oct)(14%) Incidence of unnatural female death due to burn cases are more prone in Morning(6am-12 pm)(37%) & Evening(6pm-12am) (39%).(Table no.5) as they are more active in cooking related activities where incidence of accidental burns are more prominent. Triple times of incidence of unnatural female death due to burn in female in married female (64%) than unmarried(23%) is noted as dowry and other social factors are responsible in married female.

Averagely 30-40% of Total body surface area (TBSA)(21%) & 40-50% of TBSA(20%) involved in unnatural female death cases and lesser in 10-20% (1%) & >80%(5%).(Table no.1)

Table No 1: Total Body Surface Area Involved:percentagewise Distribution

| Total body surface area involved | Cases | Percentage |
|----------------------------------|-------|------------|
| 10-20% | 4 | 1% |
| 20-30% | 64 | 17% |
| 30-40% | 82 | 21% |
| 40-50% | 78 | 20% |
| 50-60% | 56 | 14% |
| 60-70% | 49 | 12% |
| 70-80% | 26 | 7% |
| >80% | 22 | 5% |
| Total | 381 | 100% |

Duration of survival after incidence of burn(Thermal) Injury is least in more than one month (5%) & more in 12 to 24 hr(19%) & 24 to 48 hr (17%) (Table no.2)

Table No 2: Duration of Survival after Incidence:

| Duration of survival after incidence | Total burn cases | Percentage |
|--------------------------------------|------------------|------------|
| Brought dead | 38 | 10% |
| 0 to 6 h | 22 | 6% |
| 6 to 12 h | 50 | 13% |
| 12 to 24 h | 72 | 19% |
| 24 to 48 h | 65 | 17% |
| 48 to 72 h | 41 | 11% |
| 3 days to 7 days | 49 | 13% |
| 7 days to 1 month | 22 | 6% |
| More than 1 month | 19 | 5% |
| Total | 381 | 100% |

Previous history of suicidal attempts (27%) are more leads to unnatural burn injury death cases, also psychiatric illness (10%), chronic illness (13%) are more to deal with suicidal female burn death cases. (Table No.3)

Table No 3: Alleged History as Discussed with Relative in Burn Cases

| History | Female | Percentage |
|----------------------------|--------|------------|
| Psychiatric illness | 40 | 10% |
| Chronic illness | 57 | 13% |
| Previous suicidal attempts | 52 | 27% |
| Addiction | 60 | 15% |
| NIL | 172 | 45% |
| Total | 381 | 100% |

Manner of death due to burn are more common in accidental cases(41%),& suicidal cases(24%) as per history taken by relatives & Inquest papers.(Table no.4)

TABLE NO 4: Manner of Death as per inquest & history

| Manner of Death as per inquest | Female Burn cases | Percentage |
|--------------------------------|-------------------|------------|
| Accidental | 156 | 41% |
| Homicidal | 72 | 19% |
| Suicidal | 91 | 24% |
| other not differentiated | 62 | 16% |
| Total | 381 | 100% |

TABLE NO 5: Cause of death in female burn cases distribution

| Cause of death | Due to | No. of cases | Percentage% |
|----------------|---|--------------|-------------|
| Burns | septicemia+pneumonia +acute renal failure | 106 | 28% |
| | Exhaustion | 30 | 8% |
| | Neurogenic shock | 98 | 25% |
| | Electric shock | 27 | 8% |
| | asphyxia | 41 | 11% |
| | hypovolumic shock | 53 | 14% |
| | Multi-organ failure | 22 | 6% |
| Total | | 381 | 100% |

Discussion

The present retro-spective study which was carried out in the Department of Forensic Medicine and Toxicology at B. J. Medical College and Civil Hospital, Ahmedabad during the period from January 2018 to December 2018 to determine trends & pattern in unnatural female death due to burns cases and their practical approach to shrinkage the incidence of female burns cases as much as possible. In study we come across some particularized factor which exaggerated the recent condition in the society.

In a total of 381 cases of burns, females formed the majority with 64.25% which is in harmony with the

studies of Chawla et al⁷, Mazumdar et al⁸, Aggarwal⁹ and Chandra, Doshi¹⁰, Ganguly¹¹, Sinha et al¹², Haralkar and Rayate¹³, Naralwar and Meshram¹⁴. The reason may be accredited to the fact that women in India are accountable for the domestic duties including cooking where due to cultural and religious motives they wear dangerously long and loose fitted clothing. This together with lack of safe installation of cooking appliances that involves chullah, kerosene stove burst and gas leakage, making them the more vulnerable gender.

Majority of the burn victims were Hindus (48.81%) of the total burn Female victims) which is similar to the findings of D. Nath¹⁵ P. Singh¹⁶. The reason being Hinduism is the largest religion practised in India where the previous dowry system and "sati pratha" still existed in rural area.

Seasonal variations in our study showed that burn deaths occurred mostly in winter(46%) followed by summer(40%).¹⁷ This might be due to the fact that, in winter, there is more need for hot water for bathing. The traditional kerosene stove; which is extensively used in the slum areas city for cooking and providing the necessary boiling water for bathing; lacks any safety measures more in Morning (37%) & evening(39%) Thus, it is condemned to be responsible for much of the flame and scald burns in our country. This fact has been previously highlighted by the work of reporters from low income countries.¹⁸

The domestic violence can be further reinforced by the marital status of the genders in this study in which, the majority of the female death due to burn victims were married (64%) than unmarried(23%).¹⁹ Averagely 30-40% of TBSA(21%) & 40-50% of TBSA(20%) involved in unnatural female death cases.

Though the majority of the incidents are accidental in nature, suicidal and homicidal cases were also observed. As noted with other studies, accidental burning was the commonest manner of deaths due to burning followed by suicidal and homicidal burning.²⁰⁻²³ More incident noted in Previous suicidal attempts(27%) than Psychiatric illness(10%), chronic illness(13%), addiction(15%) and more in accidental(41%) than suicidal(24%)

Shock is found to be the most common cause of death in most of the victims, which is similar to the findings of Chawla R, Chanana A, Rai H, Aggarwal A.D et al⁷, Singh P, Sharma¹⁶ and D. Nath.¹⁵ Shock (neurogenic[25%], hypovolemic[14%]) is more common in 1-2 day period

after burn injury. Any kind of injury including burn injury was the common source of infection, which resulted in septicaemia, pneumonia, renal failure and septicaemic death. Lack of care on the part of the doctor was the main reasons for the septicaemic deaths in the burn victims.

Conclusion

Female(64.25%) are more prone to death due to Burn (Thermal) injury than male(35.75%) in this retrospective study almost near double. Hindu Female(48.81%) & Muslim female (39.89%) are more indulge to death due to Burn(Thermal) injury than others. There is increased incidence of death due to burn injury in summer(March-june) (40%) & winter (Nov-feb) (46%) than in rainy season. There is increased incidence of death due to burn in Morning(37%) & evening(39%) as Female are more active in cooking during this time period. Married woman(64%) are more prone to thermal injury than unmarried & widow. Averagely 30-40% of TBSA(21%) & 40-50% of TBSA(20%) involved in unnatural female death cases. Duration of survival after incidence is least in more than one month. Alleged history of previously attempted suicidal attempt (27%) are more prone to burn(Thermal) injury for unnatural female death. Accidental burn (41%) cases are more predisposed than others. Death due to burn are more (28%) in septicaemia, pneumonia, acute renal injury & Neurogenic shock (25%).

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