

## Profile of Burns Cases Brought For Post- Mortem Examination At Mortuary of Sir T. Hospital, Bhavnagar.

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**Abstracts:** Introduction: To provide better facilities medically as well medico-legally it is very important and urgent to know about the profile of cases of burns especially in Bhavnagar region. Material Method: The present study was conducted in department of forensic medicine Govt. Medical College, Bhavnagar during the period from July, 2009 to June, 2010 with a view to study the profile of burn cases brought for the post mortem examination. All the data related to age, sex, marital status, type and manner of burns with area involved, and survival time were recorded with detailed autopsy examination and subsequently analyzed statistically. Results: Epidemiological profile and other important parameters found during present study is nearly similar to other Indian studies. From the present study of epidemiological profile certain etiologies are elicited and some suggestions are given. [ Bhagora R et al NJIRM 2011; 2(4) : 109-112]

**Key Words:** Burn, Dowry deaths and Unnatural deaths in women.

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**Introduction:** Developing countries have a high incidence of burn injuries, creating a formidable public health problem. High population density, illiteracy, and poverty are the main demographic factors associated with a high risk of burn injury. The exact number of burns is difficult to determine: judicious extrapolation suggests that India, with a population of over 1 billion, has 700 000 to 800 000 burn admissions annually. The high incidence makes burns an endemic health hazard. Social, economic, and cultural factors interact to complicate the management, reporting, and prevention of burns<sup>1</sup>. Dowry deaths in India have become a problem of great concern. Almost every day we get to see in the electronic media and so to read in the news papers, cases of young women either being burnt or provoked to commit suicide by the husband and in-laws, just for the dowry. At the same time accidental burns in women also occur commonly, to which they are more vulnerable as most of the women (housewives) spend their time in the kitchen<sup>2</sup>.

Due to higher incidence of burns and high mortality rate due to burns in Bhavnagar region this study has been undertaken to find out epidemiological profile and other important aspects of deaths due to burns and to compare with the observations of various authors by scientific discussion.

**Material and Methods:** Total 1025 autopsies were conducted in the mortuary of Sir T. hospital, Bhavnagar from July, 2009 to June, 2010. During that period, out of 178 cases reported of burns, randomly 100 cases were selected for this study. This work has been approved by Institutional Review Board (Human Ethics Committee), Govt. Medical College, Bhavnagar

Detailed history of the case was obtained from the patient's close relatives, friends, police and the other available persons who were present at the time of incidence and those accompanying the victims, with special reference to General information like Name, Age, Sex, Address, Religion, Marital Status, Education, Socio-economic Status, and Occupation etc. and other information like Date and time of the incidence, Manner of the events, Date and time of death, date and time of police information, period of hospitalization, date and time of police inquest and details of autopsy examination was recorded. In doubtful cases, whenever possible dying declaration given by the patient was obtained in order to compare with the statement given at the time of admission. At the time of post-mortem, the gross features of burns during external and internal examination were noted with an attention to examination of clothes,

type of burns with their duration, nature and manner of burns, area involved with depth cause of death in all cases. All findings were compiled proforma for study. These data were reduced to tables with computer aided statistical analysis. Findings of post-mortem examination were compared with history and circumstances to know whether they are consistent or not. Conclusions were drawn after comparing and discussing it with similar type of the work carried out by the other authors.

**Result:** Maximum number of burns cases 30 (30%) was observed during the three-month period from Dec-09 to Feb-10 followed by a slight decline during the five- month period from Jul-09 to Nov-09, showing 46 cases (46 %). The incidence was lowest during June-10 with 05 cases (05%) only. Burn cases were higher in females 79 cases (79 %) as compared to 21 cases (21 %) in males making a female to male ratio of 3.76:1. Incidence was more in rural areas (60 %) as compared to that in urban areas (40 %). Majority of cases (94 %) were observed in Hindu community followed by 06 cases (06 %) from Muslim community.

Table-1 Age and sex wise distribution of burns cases

| Age Group in years | Male  |       | Female |        | TOTAL | (%) |
|--------------------|-------|-------|--------|--------|-------|-----|
|                    | Cases | %     | Cases  | %      |       |     |
| 0 - 10             | 3     | 75.00 | 2      | 25.00  | 5     | 5   |
| 11-20              | 3     | 14.30 | 18     | 85.70  | 21    | 21  |
| 21-30              | 6     | 15.80 | 32     | 84.20  | 38    | 38  |
| 31 - 40            | 3     | 20.00 | 12     | 80.00  | 15    | 15  |
| 41 - 50            | 3     | 37.50 | 5      | 62.50  | 8     | 8   |
| 51 - 60            | 3     | 42.90 | 4      | 57.10  | 7     | 7   |
| > 60               | 0     | 0.00  | 6      | 100.00 | 6     | 6   |
| TOTAL              | 21    | 20.20 | 79     | 79.80  | 100   | 100 |

Chi square: 8.35 df : 6 p > 0.05

Table-2: Distribution of burns cases according to marital status

| Marital Status | Male  |       | Female |       | TOTAL |     |
|----------------|-------|-------|--------|-------|-------|-----|
|                | Cases | %     | Cases  | %     | Cases | %   |
| Married        | 12    | 16.20 | 62     | 83.80 | 74    | 74  |
| Unmarried      | 9     | 34.60 | 17     | 65.40 | 26    | 26  |
| TOTAL          | 21    | 21.00 | 79     | 79.00 | 100   | 100 |

Chi square: 3.92 df : 1 p < 0.05

Incidence was higher in married person (74%) as compared to that in unmarried person (26 %). Out of 74 married cases 12 were male and 62 females making a female to male ratio of 5.16:1 Whereas among unmarried people 9 males and 17 females making a female to male ratio of 1.88:1. (Table-2)

Table- 3: Distribution of burns cases according to type of family

| Family type | Cases | Percentage |
|-------------|-------|------------|
| Joint       | 94    | 94.00%     |
| Nuclear     | 6     | 6.00%      |
| Total       | 100   | 100.00%    |

Higher number of cases (54 %) was noticed among below matric people and (37%) cases in illiterate people. It shows a declining trend as the level of education increases with 9 cases (9 %) in above metric people. (Table-4)

Table- 4: Distribution of burns cases according to educational status

| Educational status | Cases | Percentage |
|--------------------|-------|------------|
| Illiterate         | 37    | 37.00%     |
| Below Matric       | 54    | 54.00%     |
| Above Matric       | 9     | 9.00%      |
| Total              | 100   | 100.00%    |

Maximum numbers of burns were noticed among those under others category (86 %), which includes housewives whereas minimum cases were noticed in Private sector (6%). The incidence was 8 % among Farmer. (Table-5)

Table -5: Distribution of burns cases according to occupational status

| Occupation  | Cases | Percentage |
|-------------|-------|------------|
| Farmer      | 8     | 8.00       |
| Private job | 6     | 6.00       |
| Other       | 86    | 86.00      |
| Total       | 100   | 100.00     |

Only 01(1.49%) case of scald noticed which is accidental in nature. In cases of flame burns majority (66 cases making 98.50% of all 99 burns) were accidental, followed by 32 (32 %) cases

making suicidal burns and only 01cases (1 %) of burns homicidal in nature. Maximum number of victims (43 %) died within 24 hours of getting burns, which includes 04 cases (04 %) of spot death. After receiving burns, 05 victims (05 %) survived for 24-48 hours, 14 (14 %) for 48-72 hours, 32(32 %) for 3-7 days and 06 (06 %) survived for >7 days. Sex wise distribution of burns cases according to degree of Burns (Wilson’s classification) is shown below in Table 6

There were total 100 cases of burns, among them 70 cases (70 %) cases were of II Degree ( Dermo – epidermal burns) while 30 cases were of III Degree ( Superficial to deep burns). Among Dermo – epidermal burns 17 (24. 28 %) were male while 53 (75.72 %) were female. Among III Degree(Superficial to deep burns) 04 (13.33 %) were male and 26 (86.67%) were female burns. (Table-6)

Table 6: Burns cases according to degree of Burns (Wilson’s classification)

| Sex    | II Degree (Dermo – epidermal) | III Degree (deep) | Total | %   |
|--------|-------------------------------|-------------------|-------|-----|
| Male   | 17 (24.28 %)                  | 04 (13.33 %)      | 21    | 21  |
| Female | 53 (75.72%)                   | 26 (86.67 %)      | 79    | 79  |
| Total  | 70 (70 %)                     | 30 (30 %)         | 100   | 100 |

Table 7: Distribution of burns cases according to percentage of body surface involved in burns

| Body surface involve in burns (%)  | Male |       | Female |       | Total |       |
|------------------------------------|------|-------|--------|-------|-------|-------|
|                                    | Case | %     | Case   | %     | Case  | %     |
| ≤ 40                               | 2    | 33.33 | 4      | 66.67 | 6     | 6.00  |
| 41 – 50                            | 2    | 40.00 | 3      | 60.00 | 5     | 5.00  |
| 51 – 60                            | 2    | 33.33 | 4      | 66.67 | 6     | 6.00  |
| 61 – 70                            | 2    | 16.67 | 10     | 83.33 | 12    | 12.00 |
| 71 -80                             | 3    | 25.00 | 9      | 75.00 | 12    | 12.00 |
| 81 – 90                            | 4    | 15.39 | 22     | 84.61 | 26    | 26.00 |
| 91 – 100                           | 6    | 18.18 | 27     | 81.82 | 33    | 33.00 |
| Total                              | 21   | 21.00 | 79     | 79.00 | 100   | 100.0 |
| Chi square: 16.33 df : 25 p > 0.05 |      |       |        |       |       |       |

In 89 cases (89 %) more than 50 % of body surface area was involved in burns. Of these 89cases, 17

cases (17%) of were male and 72 cases (72 %) were females. In 11% cases (04%) of total male cases and 07 % of total female cases) the involvement of body surface area was less than or equal to 50%. (Table-7)

Out of total 100 burns cases 99 % cases were of flame burns whereas 1% cases was of scald only. Flame burns were observed largely in females. Among 99 flame burn cases 78 cases were noticed in females and rest (21 cases) were in males and these were distributed in all age groups. The maximum flame burn cases (38) were observed in 21-30 year of age group followed by 21cases in 11-20 year age group. Only 01 case of scalds has been noticed and it is in female of 0-10 years of age. In the age group of 0-10 years minimum cases (5 %) were recorded, out of which 04 were flame burns and the remaining 01 were scald.

**Discussion:** In present study findings were consistent with history. In present study rate of burn death was higher in third decade of life in married women which is well supported by many Indian authors like Chandra et. al<sup>3</sup>, Ghuliani KK<sup>4</sup>, Tirpude BH<sup>5</sup>, Naik RS<sup>6</sup>, Gupta RK<sup>7</sup>, Sharma BR<sup>8</sup>, Mangal HM et al<sup>2</sup>. This might be due to their involvement in kitchen and dowry deaths. The higher rate was also observed in younger male which may be due to modern life style, tension, and also due to social, economical, carrier related and family problems. In the present study majority of burns deaths were due to flame burns followed by scalds and electric burns which is well supported by many Indian authors like Mangal HM et al<sup>2</sup>, Ghuliani KK<sup>4</sup>, Gupta VK<sup>9</sup>, and Sharma BK<sup>10</sup>. Present study show that majority of cases of burn death were accidental deaths followed by suicidal deaths, which is similar to findings of Mangal HM et al<sup>2</sup>, Ghuliani KK<sup>4</sup>, Gupta RK<sup>7</sup>. Manner of death was concluded after considering the history given by relatives and police, postmortem findings, dying declaration if available, and circumstantial evidence. In this study, maximum (59 %) cases were of burns involving more than 80 % of the total body surface area and 41 % cases had burns involving less than 80 % of total body surface area. Ghuliani KK<sup>4</sup> and Sharma BK<sup>10</sup> have reported 81 % and 63 % cases respectively involving more than 50 % of body surface area. In our study, majority of the case (43

%) died within the very first day of incidence. 19 % died within next two days, 32 % victims died within 3 – 7 days and rest 6 % died after 7 days of incidence. In Majority of cases victim died either on the spot due to neurogenic-shock or with in first 36 hours due to hypovolaemic-shock. After that cause of death in all case was septicaemia and complications arising from it.

**Conclusion:** Epidemiological profile and other important parameters found during present study is nearly similar to other Indian studies. Most of the burn victims were married females of younger age group, who died due to hypovolemia with in very first day of incidence either due to accidental or suicidal burns involving more than 50% body surface area. In present study it is also found that victims with lesser percent of burns were also died inspite of treatment given at tertiary level. So it is matter of great concerned for our health system to find the pitfalls and correct it to save the lives.

**Suggestions:** Educating the general public especially the vulnerable group, Provision o better housing conditions and reduction of overcrowding, Burning and lighting agents, like kerosene wick, deepak, candles should not be left unguarded, The use of unsafe kerosene pressure stoves should be stopped or their design and quality to be improved to ensure the safety, Women should be made aware of dangers of loose and long flowing synthetic garments, Small children, should be kept away from the kitchen and fire sources, Safety means in factories should be strictly observed, Prevention of suicidal and homicidal burn deaths needs change in mental attitude, social traditions and customs, Publicity of law related to dowry death through appropriate media should be done specially in rural areas

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