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RETROSPECTIVE ANALYSIS OF DEATH DUE TO BURNS IN RURAL REGION
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Abstract:
Death due to burning is not uncommon in India, which is mostly amongst the married women. Therefore investigation of these cases is essential to find out various preventive measures for health policies. The present study was undertaken in Department of Forensic Medicine at Rural Medical College, Loni. In it the deaths were retrospectively analysed from the available records of burns victims that were autopsied during a period 2006 to 2010. In present study, the data was analysed in view of age, gender, marital status, percentage of burns, hospital stay of victim of thermal burns. Analysed data was tabulated and represented graphically.

Key words: Burns, percentage of burns, rural region.

Introduction:
Burning of married women in India is a major concern for the Government, law enforcing authorities, the judiciary, the police and medicolegal experts all over the country.
The impact of burns, especially severe ones, is worse in the developing countries compared to high income countries because of infections and lack of adequate physiotherapy.(1)

As per the global estimates of causes of deaths related to injuries, the total deaths from unintentional causes were 35,51,000 (6.2%). They included 11,92,000 (2.1%) deaths due to road traffic accidents, 3,50,000 (0.6%) deaths due to poisoning, 3,92,000 (0.7%) due to falls, 3,12,000 (0.5%) due to fires, 3,82,000 (0.7%) due to drowning and 9,23,000 (1.6%) deaths due to other injuries. The same study reported Intentional causes of deaths (2.8%), which included 8,73000 (1.5%) deaths due to self-inflicted injuries, 5,59,00 (1.0%) due to violence and 1,72,000 (0.3%) due to war injuries.1

Among all male deaths 44.64% were due to unintentional causes, 22.38% due to intentional causes, whereas 24.0% females died of unintentional causes and 8.92% of intentional causes.1

The mortality in the SEAR Country due to unnatural disasters during 2001 to 2003 is 234368, 243394, 244671 respectively and natural disasters 36651, 16723, 14954 respectively. Number of Burn deaths in India during this period is 22449, 21004, 19278 respectively.1

Aims and Objectives:
1. To collect data to find out various informations related to age, sex, marital status & surface area of burn to prepare policy to prevent occurrence of burn in rural society.
2. To know the trend of death due to burns.
3. To know the demographic distribution of burns.
4. To identify vulnerable individuals.
5. To know the magnitude of mortality due to burns.
6. To know the survival period.

Material and Method:
The present retrospective study was conducted in the Department of Forensic Medicine and Toxicology, Rural Medical College, PIMS(DU), Loni(M.S.), for the period between 01/01/2006 to 31/12/2010. Information regarding Age, Sex, Hospital stay, address was gathered from the data available in the department.

**Inclusion Criteria:**
1. All cases of burns admitted in hospital of rural medical college between the year 2006-2010
2. The bodies which were received in the institution for postmortem examination.

**Exclusion Criteria:**
1. The bodies brought dead to the hospital
2. Burns other than Flame Burns.

**Results:**
Out of total 958 autopsies which were conducted at Department of Forensic Medicine and Toxicology, Rural Medical college, PIMS, Loni, (M.S) during the study period from 1st January 2006 to 31st December 2010, 168 were burns deaths, 160 cases were admitted in the hospital and 8 cases were brought dead to the hospital. There was no regular pattern in the incidence of burn over the study period.

<table>
<thead>
<tr>
<th>Marital status</th>
<th>Number of cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>142</td>
<td>88.75</td>
</tr>
<tr>
<td>Unmarried</td>
<td>18</td>
<td>11.25</td>
</tr>
<tr>
<td>Total</td>
<td>160</td>
<td>100</td>
</tr>
</tbody>
</table>

It is observed that out of 160 cases of burn 116 cases were females and 44 cases were males and the male : female ratio was 1:3 (Table-1)
It is observed that maximum number of cases were in the age group of 20-29 years, and minimum number of cases were found in the age group of 70-79 years, and no cases were found above the age of 90 years. More male victims were present in age group 50-59 years and more female victims in age groups of 10-19 years, 20-29 years, 30-39 years, 60-69 years and 80-89 years. Mortality were same between the age groups 00-09 years, 40-49 years and 70-79 years.

Table 3: Age and Gender wise distribution of the victims of burns

<table>
<thead>
<tr>
<th>Age group (Yrs)</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-09</td>
<td>05</td>
<td>05</td>
<td>10</td>
</tr>
<tr>
<td>10-19</td>
<td>01</td>
<td>08</td>
<td>09</td>
</tr>
<tr>
<td>20-29</td>
<td>09</td>
<td>54</td>
<td>63</td>
</tr>
<tr>
<td>30-39</td>
<td>10</td>
<td>31</td>
<td>41</td>
</tr>
<tr>
<td>40-49</td>
<td>13</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>50-59</td>
<td>05</td>
<td>00</td>
<td>05</td>
</tr>
<tr>
<td>60-69</td>
<td>01</td>
<td>04</td>
<td>05</td>
</tr>
<tr>
<td>70-79</td>
<td>00</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>80-89</td>
<td>00</td>
<td>01</td>
<td>01</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>116</td>
<td>160</td>
</tr>
</tbody>
</table>

As regards the body surface area involved, it was observed that more than 80% of body surface area is involved in 67 (41.875%) cases. (Table 4)

Table 4: Distribution of burns over Total Body Surface Area.

<table>
<thead>
<tr>
<th>% of Burn</th>
<th>No of cases</th>
<th>% of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>00-10%</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>11-20%</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>21-30%</td>
<td>02</td>
<td>01.25</td>
</tr>
<tr>
<td>31-40%</td>
<td>05</td>
<td>03.125</td>
</tr>
<tr>
<td>41-50%</td>
<td>13</td>
<td>08.125</td>
</tr>
<tr>
<td>51-60%</td>
<td>19</td>
<td>11.875</td>
</tr>
<tr>
<td>61-70%</td>
<td>24</td>
<td>15.000</td>
</tr>
<tr>
<td>71-80%</td>
<td>30</td>
<td>18.75</td>
</tr>
<tr>
<td>81-90%</td>
<td>25</td>
<td>15.625</td>
</tr>
<tr>
<td>&gt;90%</td>
<td>42</td>
<td>26.25</td>
</tr>
<tr>
<td>Total</td>
<td>160</td>
<td>100</td>
</tr>
</tbody>
</table>

Out of 160 cases, in 147 the period of survival was known however in 13 cases, the time of death was not available. Maximum period of survival was more than one month in 03 cases. Maximum number of cases died within 24 hours of admission i.e. 32 (20%). 91 (63.125%) cases died within one week of admission. (Table 5)
Discussion:

Burns in developing countries like India is endemic and continues to be a major challenge to the health care provider and society. Though there is no time trend in this region, yet 17.70% of the total deaths are autopsied. However, Virendra Kumar et al in his study reported this rate as 19.40%.

Total number of postmortem examination conducted at department from 2006, 2007, 2008, 2009 and 2010 were 183, 151, 175, 203 and 246 respectively. Total number of deaths due to burns was 22, 23, 25, 48 and 42 respectively during year 2006 to 2010. Thus the during the years 2006-2010, respectively 12.02%, 15.23%, 14.28%, 23.64%, 17.07% of cases died due to burns. Data shows increase in number of deaths due to burns from 2006 to 2009 however, the rate dropped in 2010. Hence, Out of the 958 autopsies performed on all types of unnatural deaths between 1st January 2006 to 31 December 2010, 160(16.70%) were conducted on bodies that have died due to burns, which is 3% less from the study of Virendra Kumar et al. These 160 fatal burns cases forms the material of this study in respect to data of age, sex, marriage, percentage of burns and hospital stay.

Out of total 588 suicidal deaths studied by Mohanty S et al, 71.4% were married and 28.6% were unmarried. In present study data deaths due to burns are more common amongst the married subjects. This may be due to the reason associated with the marriage. Both in married and unmarried subjects, female outnumbered males.

Virendra Kumar et al observed 75% of female burns victims. In present study we find that incidence of burns is more common among females in all age groups except in the elderly and age group 50 to 59 years of age, where male are at higher risk. Amongst all age groups 72.50% were females.

In the study conducted by Virendra Kumar et al, about 78% of the victims were in the age group of 11-40 years. Highest deaths were reported between age 21-30 years in study conducted at North Karnataka by Tapse SP et al. In Manipal, Palimar V and Raghavendra Babu Y.P have conducted 14 years retrospective study in below 18 years age group and found that, out of total 42 cases, maximum cases (42.8%) of burns were between 13-18 years of age. In our study about 53% of the victims were in the age group of 21 to 40 years, and about 70% of the victim were in the age group of 11 to 40 years.

In the study of Virendra Kumar et al, the overwhelming majority (92.50%) of the victims had more than 40% of total body surface area (TBSA) burns indicating the incompatibility with life even at a tertiary care center. About 94% mortality in over 40% of TBSA was reported in study from North Karnataka by Tapse SP et al. In Manipal, in the study conducted by Palimar V et al, below 18 years of age, 54.9% of deaths were reported with burns above 60% of TBSA. In our study, 95.6% mortality is in cases of over 40% of TBSA.

Tapse SP et al, in their study reported less than 1 hour survival period in 49% burns deaths, 3 to 7 days survival in 08% deaths and one week survival period in 78% deaths. In our study 63.12% of burns deaths are within a week and 36.25% burns deaths between 3-7 days of the incidence of burns.

Conclusion:
The present study highlights the following features pertaining to the burn deaths:
1. Majority of deaths occurred in the married subjects (about 89%).
2. Majority of the burns victims are females in child bearing age (about 71%).
3. Peak incidence of mortality due to burns was observed in adolescent and young age groups (11-40 years).
4. Mortality of 96% was observed in subjects having TBSA of above 40%.
5. Majority of deaths occurred within a week of the incidence (about 63%).

References: