

## Profile of Suicide by Burn in Jharkhand: an Autopsy Based Study

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### Abstract

**Background:** Self intentional violent acts are one of the important causes of death nowadays. Burning is one of the modes of committing suicide, although it is painful and non-instantaneous death as compared to others modes of suicide. Since limited data is available on suicidal burn in this part of India i.e. Ranchi, Jharkhand. Therefore, we have planned this study to know the profile and attributing factors for suicidal burn in the state of Jharkhand of India. **Materials & Methods:** This prospective study which was carried out on 162 cases of death due to burns in the department of forensic medicine & toxicology of Rajendra Institute of Medical sciences, Ranchi during from 15<sup>th</sup> April, 2012 to 14<sup>th</sup> October, 2013. Information regarding the socio-demographic, mode of suicides, time of incidence, place of incidence, occupation, etc were gathered from the police papers like inquest report, dead body challan etc, and through detailed interviews of the relatives, neighbors, friends, and police officials accompanying the dead bodies. **Results:** Hindu married females belonging to rural background between ages 15 years to 44 years were most common victims of suicidal burns. Most of the suicidal burns occurred during summer season (61%) followed by winter (Dec-March) (17%). Majority (56%) were chose In Law's home followed by parental home (44%). The maximum suicidal burns incidence occurred at evening (between 4 PM to 8 PM), which accounts 33% followed by late night (between 12 AM to 4 AM) with 22%. **Conclusion:** The present study has findings more or less consistent with the findings of the other studies conducted in Indian.

**Keyword:** Suicidal Burn; Seasonal Variations; Place of Incidence.

### Introduction

Suicide is one of the leading causes of death in the World. Approximately one million people commit suicide each year, or about one life lost every 40 seconds [1]. The World Health Organization (WHO) estimates that of the nearly 900,000 people who die from suicide globally every year, 170,000 were from India [2]. Suicide rates in the world, mainly in

developing countries, in the past fifty years have increased about 60%. A significant amount of suicides occur in Asia, which includes about 60% of suicides. Based on WHO reports, China, India and Japan were included in approximately 40% of all world suicides [3]. Suicide by burning was a rare condition in the developed countries (0.06-1% of all suicides) but was more frequent in the developing countries (accounting for as many as 40.3% of all suicides). Burns were the fourth most common type of trauma worldwide, following a road traffic mishaps, falls, and violence among people. A majority of incidences of burns occur in countries or regions which lack the basic infrastructure and setup to reduce the incidence and severity of burns [5].

In India, burn injury was one of the major causes of death, specifically in females. The problem of burns in developing countries like India was more as a result of different and varied socio-cultural factors present in the Epidemiology of Burn Deaths in Jharkhand, India. Some of these factors may be poor housing conditions, inadequate maintenance of

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Received on 21.06.2017, Accepted on 22.07.2017

electric appliances, dowry, poor literacy, poverty and ignorance. The exact assessment of the incidence of burns was not easy due to overpopulation and less reporting. The loads of ever expanding population, poor literacy, lower socioeconomic status, insufficient safety standards at home and in industry, corruption etc. have caused a significant increase in cases of burns [6].

Effective suicide prevention requires good studies on the use of suicide methods and attributing various others factors in different countries. Suicide was often committed out of despair, or attributed to some underlying mental disorder, which includes depression, bipolar disorder, schizophrenia, alcoholism and drug abuse [7]. Financial difficulties, troubles with interpersonal relationships and other undesirable situations play also significant role [8].

According to International Association for Suicide Prevention, Suicide is nevertheless a private and personal act and a wide disparity exists in the rates of suicide across different countries. A greater understanding of region-specific factors related to suicide would enable prevention strategies to be more culturally sensitive [9].

As per data available with National Crime Report Bureau (NCRB) Government of India [10] that there were few studies conducted in India. Such study has not been conducted in this part of India i.e. Ranchi, Jharkhand. Therefore, we have planned this study to assess various epidemiological factors related to deaths due to suicidal burns in the state of Jharkhand of India. The result of study may be help to plan strategies to prevent such mortality and morbidity due to suicidal burns in this part of country.

### Materials and Methods

This prospective study was carried out in the Department of Forensic Medicine & Toxicology, Rajendra Institute of Medical Sciences (RIMS), Ranchi for a period of one and half year from April, 2012 to October, 2013. The materials for the present study were cadavers brought for medico legal autopsy from various police stations of Ranchi District (Jharkhand) at the Forensic Medicine and Toxicology Department of RIMS, Ranchi. During the study period total 3492 cases were autopsied, out of which only 162 cases were suicidal burns in nature. These 162 cases of burns were screened on the basis of information provided by the relatives, neighbours, friends, and police officials accompanying the dead bodies and finding present on the bodies. Further information regarding the socio-

demographic, mode of suicides, time of incidence, place of incidence, occupation, etc were gathered from the police papers like inquest report, dead body challan etc, and through detailed interviews of the relatives, neighbours, friends, and police officials accompanying the dead bodies. In case of hospital deaths, hospital papers were also examined. To calculate the seasonal variation the seasons were classified according to the Indian Meteorological Department (IMD) [11] which designated four climatological seasons in India were as: Winter, occurring from December to March, Summer or pre-monsoon season from April to June, Monsoon or rainy season from July to September and Post-monsoon or autumn season from October to November.

Collected data were entered in to SPSS version 10 and were analyzed and results were presented in the form of table and figures.

### Results

This study was an attempt to analyse the demographic profile of suicidal deaths due to burn in this part of the country. To achieve the goal of study a 162 cases of suicidal burns deaths were screened and analysed. This comprised 4.64% of the total post-mortem conducted in the department during the study period.

Amongst total 162 cases of suicidal burns, 63 (39%) were male and 99 (61%) were female. It was found that the females victims outnumbering the males.

It was observed from Table 3 in which the cases were distributed on the basis of their religions and it is observed that the majority of victims were Hindus (72 %) followed by Muslim (22 %) and Christians (6%) and.

Age-wise profile of victims showed that the majority (89.0%) of victims who had committed suicides by burn were in the age-group 15-44 years. Among them, majority (91; 78%) were females and 53 (22%) were males. While in the age of less than 15 years the males outnumbering the females (Table 1).

#### *Social Status of Suicidal Burn Victims*

Social Status of victims was classified in various categories on the basis of marital status, Economic and Educational status. The information on the social status of suicide victims was presented in Table 2. It observed that 78% of the suicide victims were married while 16% were unmarried. Widows

and Divorcees have accounted for 6%. Out of married victims, majority 63.08% victims were female while the rest 24.61% were male.

As it was depicted in the Table 3, the maximum cases (67%) were from a rural area followed by sub-urban (22%). The distribution of cases according to economical status the majority (78.0%) of suicidal burn victims were belonged to middle economic class followed by lower economic class (23%). The maximum burn victims (79.0%) were Illiterate and majority (73%) of cases were from Hindu religion,

followed by Muslim (22%) and Christian religion (6%). Furthermore, the cases were distributed according to place of incidence and it was observed that majority (56%) were chose In Law’s House followed by parental house (44%) (Table 3).

The seasonal variations in cases are depicted in Table 4. Most of the suicidal burn occurred during summer season (61%) among the summer the maximum in the month of April and May with 28% each. This is followed by winter (Dec-Feb) season (16.7%).

**Table 1:** Distribution of victims of suicidal burn in relation to Age and Gender

Age Group (in years)	Gender				Total	
	Male		Female		Frequency	%
	Frequency	%	Frequency	%	Frequency	%
0-14	06	06.3	5	5	9	05.6
15-29	23	36.6	40	40	63	39
30-44	30	47.7	51	52	81	50
45-59	00	0.1	0	0	0	0
>60	6	9.5	3	3	9	5.6
	63	39	99	61	162	100

**Table 2:** Distribution of victims of suicidal Burn in relation to Nuptial and Gender

Marital Status	Male		Female	
	Frequency	%	Frequency	%
Married	127	78	49	38.6
Unmarried	26	16	14	53.8
Widow	9	6	00	00
Total	162	100	63	39

**Table 3:** Distribution of Cases of Suicidal Burn

Variables	Co Variables		
Habitats wise distribution	Urban	Sub-urban	Rural
	18 (11%)	36 (22%)	108 (67%)
Socioeconomic Status wise distribution	High	Middle	Lower
	02 (1%)	126 (78%)	36 (23%)
Educational Status wise distribution	Literate	Illiterate	
	34 (21%)	128 (79%)	
Religion wise distribution	Hindu	Muslim	Christian
	117 (73%)	36 (22%)	09 (06%)
Marital Status wise distribution	Married	Unmarried	Widows
	127 (78%)	26 (16%)	09 (06%)
Place of Incidence wise Distribution	In Law’s House	Parent House	Rental House
	90 (56%)	72 (44%)	00 (00%)

**Table 4:** Distribution of Victims of Suicidal Burn according to Season of Incidence

Seasons	Frequency	%
Winter (December - Feb)	18	16.7
Summer (Pre Monsson) (March - May)	66	61
Rainy (Monsson) (June - August)	12	11.1
Post-monsoon(September - November)	12	11.1

**Discussion**

Each suicide is a personal tragedy that prematurely takes the life of an individual and has a continuing

ripple effect, dramatically affecting the lives of families, friends and communities. Every year, more than 1,00,000 people commit suicide in India. There were various causes of suicides like professional/

career problems, discrimination, sense of isolation, abuse, violence, family problems, mental disorders, addiction to alcohol, financial loss, chronic pain etc. NCRB collects data on suicides from police recorded suicides cases [12]. The numbers of suicides in the country during the decade (2005–2015) have recorded an increase of 17.3%. The increase in frequency of suicides was reported each year till 2011 thereafter a declining trend has been noticed till 2014 and it again increased by 1.5% in 2015 over 2014. The population has increased by 14.2% during the decade while the rate of suicides has slightly increased by 2.9% (from 10.3 in 2005 to 10.6 in 2015). The rate of suicides was showing a mixed trend during the decade (2005–2015), however, rate of suicides was showing declining trend since 2010 [12].

#### *Causes of Suicides*

Family Problems and Illness were the major causes of suicides which accounted for 27.6% and 15.8% of total suicides respectively during 2015. 'Marriage Related Issues' (4.8%), 'Bankruptcy' & 'Love Affairs' (3.3% each), 'Drug Abuse/Alcoholic Addiction' (2.7%) and 'Failure in Examination' & 'Unemployment' (2.0% each), 'Property Dispute' (1.9%), Poverty (1.3%) and Professional/Career Problem (1.2%) were other causes of suicides [12].

There were different methods and means of committing suicides. The use of fire for suicide was uncommon but not rare, but it was described as low incidence compared to other means [13]. The use of fire was among the most traumatic of all forms of suicide and has a strong cultural significance and political impact in several countries. There were references to self-injury associated with different beliefs, such as the Sati ritual in India, where widows threw themselves on the funeral pyres of their dead husbands. In more modern times, the main motivations for self-immolation were personal or family matters [14]. Gender and geographical distribution influence suicide methods. In India, most suicides were committed by young and married women, with the use of gasoline [12]. This was similar in Iran [15,16], Cairo [17] and in other Asian populations [18]. The overall male: female ratio of suicide victims for the year 2015 was 68.5:31.5, showing a marginal increase of male and marginal decrease of female ratio as compared to year 2014 (67.7:32.3). The proportion of Boys: Girls suicide victims (below 14 years of age) were 53.8:46.2 in 2015 as compared to 52.3:47.7 in 2014. The proportion of female victims were more in 'Marriage Related Issues' like 'Dowry Related Issues', 'Divorce', 'Physical Abuse (Rape)'. Middle aged people (30 and above-

below 45 years) and Youth (18 and above- below 30 years) were the most vulnerable groups resorting to suicides. These age groups accounted for 33.4% and 32.8% suicides respectively [12].

In this study, most individuals who committed suicide by burning (85%) were between the ages of 15 and 44 years, similar to other reports [19,20,21]. These findings were perfectly understandable, since people in this age often incur different risk situations (at work, social environment and marriage) that may cause distress or an unexpected response. The influencing factors for this distribution were unemployment, failure in love, marital disharmony, financial problems, dowry harassment etc. The suicides were a path to find a way out of these situations.

#### *Social Status of Suicide Victims*

Social Status of victims was classified in various categories on the basis of marital status, Economic and Educational status. The information on the social status of suicide victims was presented in Table 3. It observed that 78% of the suicide victims were married while 16% were un-married. Widows and Divorcees have accounted for 6%. Similar observation was reported by NCRB [12], that the about 69.5% of the suicide victims were married while 21.1% were un-married.

The distribution of cases of burn according to marital status showed that the incidences in married people were higher as compared to unmarried people. Out of married cases, 63.08% victims were female while the rest 24.61% were male. Similar findings with ratio of female predominance were reported by Gupta RK and Srivastava AK [22], Batra AK [23], AmbadeVNetal [24], Mangal HM et al [25], Zanjad NP et al [26] and Dasari H et al [27]. It could be due to social and family related problems observed more in married persons especially in females. Specifically among married females those were victims of the heinous crime of dowry as practiced in India.

#### *Economic Status of Victims*

The information on the economic status of suicide victims was presented in Table 3. Majority (78.0%) of suicidal burn victims were belonged to middle economic class. The findings of the present study have consistency with the findings reported by different authors on the same problems like Gupta M et al [28], Jayaraman V et al [29], Subrahmanyam M [30], BR Sharma et al [31], and Haralkar SJ et al [32] and Tasgaonkar V G, et al [21]. This could be due to

unemployment, partial or total dependence on husband on parents, poor education and dowry system lead to low socioeconomic status and poor standards of living.

#### *Educational Status of Victims*

The education-wise breakup of suicidal burn victims was presented in Table 3. The maximum numbers of victims (79.0%) were illiterate. This finding was consistent with M. K. Doibale [33], Jayaraman V et al [26] and Attia AF et al [34]. Education attributes to more awareness, responsible behaviour, more knowledge and practice of safety measures. Hence incidence of burns among illiterates was found to be maximum than educated.

#### *Habitat wise Distribution*

In the present study, maximum 108 cases (67%) were from a rural area. Similar findings were reported by different authors those conducted similar studies in different parts of the country like Batra AK [23], Zanjad NP et al [26], Dasari H et al [27] and Tasgaonkar V G, et al [21]. While Chawla R et al [35] and Singh D et al [36] reported majority from urban. The reason for the increased incidence of burn cases among rural population in the present study may be due to our Medical Institution and Hospital acts as a referral centre for nearby vast rural population attached to it and therefore all the medico-legal post-mortems conducted on burn cases in our autopsy centre, which were referred to this institute were higher.

#### *Religion wise Distribution*

The results of present study revealed that maximum number (73%) of cases were from Hindu religion, followed by Muslim (22%) and Christian religion (6%). This finding was consistent with Gupta RK and Srivastava AK [22], Pandey A [37], and Mohanty MK et al [38].

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