



Burnt Wives of Agartala: A Retrospective Study From Medico Legal Autopsies of A Tertiary Hospital of Tripura, Northeast India

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Abstract

Introduction: *High mortality in young married women from burns is an alarming problem in our country.*

Materials and Methods: *All medico-legal autopsies of burn cases of married women which were performed between January 2014 and June 2015 were analyzed with respect to age, religion, community and region distribution, years of marriage, educational status, inflammable substance used, body surface area which was involved, the cause of death and manner of death.*

Results: *The maximum number of the victims (37.96%) belonged to the age group of 21 to 30 years. Majority of the victims were Hindus (70.37%). Most of them were non-tribal women (81.94%). 73.14% hailed from rural areas. Most of the victims (57.40%) were within 7 years of marriage. A majority of the victims were illiterate (45.37%). Kerosene oil was used in majority of cases (99.53%). Most of the incident took place in kitchen (83.33%). In 75.46 % cases, more than 80% of the body surface area was involved. Shock was the cause of majority of deaths (65.74%), followed by Septicaemia (28.7%). The manner of death in 81.94% cases was suicidal followed by accidental (16.2%) and homicidal (1.85%).*

Discussion: *Present study is in accordance with other studies where age group of 21-30 years are mostly affected. Hindus are the majority and kerosene oil burns are common.*

Conclusion: *Education regarding fire safety and awareness discouraging dowry demands should be instilled amongst the common mass. Dedicated burn units should be made functioning with detection and treatment of infections to reduce mortality.*

Keywords: *burn death, medico-legal autopsy, kerosene oil, shock.*

Introduction

When early man discovered fire by rubbing of two stones, least did he knew that this fire would lead to so many casualties. Burn injuries have long been described as among the most serious injuries that may affect human body^[1]. Burns are a significant mode of suicide and homicide the world over. Predominance of male is found in all

methods of suicide and homicide, except burning^[2]. Burn is an injury which is produced by the application of dry heat such as flames, radiant heat or hot substance over the body surface^{[3][4]}. They are the 4th most common type of trauma worldwide, following traffic accidents, falls and interpersonal violence^[5]. In 1998, death due to fire was listed amongst the fifteen leading causes of

death in India^[6]. In Indian sub continent “bride burning” is an alarming issue and requires attention of the Government and common mass. Suicidal and accidental burns are also common as they are the homemakers and have to remain in the vicinity of kitchen fire. Moreover delay in prompt treatment causes fluid loss from burnt surfaces leading to Shock and microbial infections leading to Septicaemia. The objectives behind this present study are: a) To study the socio-demographic pattern of burn deaths among married women in Agartala. b) To study the profile of factors of the incident and burn injuries amongst the deceased. c) To study the manner and cause of death among the deceased.

Materials and Methods

Present study is a retrospective study, done at a tertiary care hospital and medical college at Agartala, the capital of Tripura. This study was conducted within one and half year of duration from 1st January 2014 to 30th June 2015. Study sample was all the medico-legal autopsies of married woman with burn deaths, coming to the Department of Forensic Medicine and Toxicology from the hospital deaths, and also those that were brought dead from home or were referred from other hospitals. Details of the cases are collected from the police papers, the inquest reports, history from relatives, hospital records and the autopsy records. Percentage of total body surface area burn was calculated according to Wallace’s rule of nine. Burnt hair and skin were sent for hydrocarbon analysis to State Forensic Laboratory. Features of Shock were noted in each case. Swabs from burnt surfaces of suspected cases of Septicaemia were sent for presence of microbial organism. Splenic culture was done. Piece of both kidneys were sent for histopathological examination. Excess fluid in body cavities was checked for fluid over load. All data and findings were noted, analyzed and tabulated.

Observation and Results

Between January 2014 and June 2015, a total of 1389 medico-legal autopsies were conducted, out

of which total number of burn death cases were 270(19.43%). A majority of the victims (80%) were females i.e 216 cases. The maximum number of the victims (37.96%) belonged to the age group of 21 to 30 years, with the least number of victims in the age groups less than 11 years and above 40 years [Table-1]. Majority of the victims were non-tribal women (81.94%) compared to tribal women (18.05%)[Table-1]. Further it was observed that majority of the victims (70.37%) in the present study were Hindus, followed by Muslims (18.51%), Christians (8.3%) and Buddhists (0.97%) [Table-1]. Most of the victims (86.11%) were married and among them (57.40%) were within seven years of marriage. Most of the victims (73.12%) were from rural areas and the rest (26.85%) belonged to urban areas. A majority of the victims (45.37%) were illiterate [Table-1]. In majority of the cases, incident of burn took place in kitchen (83.33%), followed by other rooms(13.88%) and outdoors(2.77%) [Table-2]. In maximum number of cases (99.53%) kerosene oil was used. Only in 1 case (0.46%) petrol was used as the inflammable substance [Table-2]. In the present study, it was observed that more than 80 % of the body surface area was involved in 75.46% cases. Only in 4.16% of the deceased were seen with burns involving <40% of the body surface area [Table-2]. Shock was observed to be a major cause of death (65.74%) among the deceased, followed by Septicaemia (28.71%), Acute Renal Failure (4.62%) and fluid over load(0.92%)[Table-3]. In majority of cases (81.94%) manner of death were suicidal, followed by accidental(16.20%) and homicidal(1.85%)[Table-3]. In 04 cases(1.85%) other injuries were noted over the body of the deceased.

Table -1: Socio demographic pattern of burn deaths among married women.

		Number(N=216)	Percentage (%)
Age in years	0-10	1	0.46
	11-20	41	18.98
	21-30	82	37.96
	31-40	34	15.74
	41-50	13	6.02
	51-60	11	5.09
	61-70	11	5.09
	>70	13	6.09
Religion	Hindu	152	70.37
	Muslim	40	18.51
	Christian	18	8.33
	Buddhist	2	0.97
Community	Tribal	39	18.05
	Non-tribal	177	81.94
Education	Illiterate	98	45.37
	Primary school	39	18.05
	Matriculation	28	12.96
	Higher Secondary	25	11.57
	College	16	7.9
	Graduate	10	4.62
Years of marriage	Unmarried	30	13.88
	≤7 years of marriage	124	57.40
	>7 years of marriage	62	28.70
Region	Urban	58	26.85
	Rural	158	73.15

Table-2: Profile of factors of the incident and burn injuries amongst the deceased

		Number(N=216)	Percentage (%)
Place of incident	Kitchen	180	83.33
	Other rooms	30	13.88
	Outdoors	6	2.77
Inflammable substance	Kerosene oil	215	99.53
	Others(petrol)	1	0.46
Percentage of burn	<40%	9	4.17
	40-80%	24	11.11
	>80%	163	75.46

Table-3: Manner and cause of death among the deceased.

		Number(N=216)	Percentage (%)
Manner of death	Suicidal	177	81.94
	Accidental	4	1.85
	Homicidal	35	16.20
Cause of death	Shock	142	65.74
	Septicaemia	62	28.70
	Acute Renal Failure	10	4.62
	Fluid overload	2	0.92

Discussion

Burn injuries possess a great threat to our society. Not only is the mortality high but also leads to permanent scars which might be a social stigma for many. Burnt contractures may be life threatening and may also cause disfigurement. Burn deaths are an alarming issue specially amongst the young married females in this subcontinent. An analysis of the data of the present study revealed a female preponderance of 4:1. No other similar study was conducted in this state earlier, but other studies around the country show similar results. A study conducted by Harish D, Kumar A at Punjab shows female preponderance of 1.7:1 [7]. Another study carried out at Assam by Mazumdar A, Patowary A also shows female predominance of 2.9:1 [8]. Some other studies, in contrast, showed a male predominance [9][10]. Out of the 216 burnt deaths of women analyzed, a majority was in the age group of 21 to 30 years and the least were in the extreme age groups i.e. below 11 years and above 40 years. This finding is in accordance to other studies conducted at Punjab [7], Assam [8][11], Mumbai [12], Manipal [13], West Bengal [14]. This age group is mostly affected as they are the young females who fall into the marriageable age in India and marital discord, quarrels and dowry demands may cause depression leading to suicidal deaths. Also career oriented women seeking jobs may commit suicide due to frustration. Failure in love is also a factor behind teenage suicides. Accidental deaths due to burn are also an important factor. Indian women wearing dhupatta, sarees and flared dresses may easily catch fire as they have to stay in the vicinity of kitchen fire. Most of the victims belonged to the Hindu religion and the reason behind this was the Hindu dominant population in the state, which is in conformity with the findings of other researchers [15][16]. Burn deaths are less common amongst tribal population in the state. It is because custom of dowry is not prevalent in this community. Mostly illiterate women are found to be affected. Our findings are in conformity with those of others which were done at

various other regions^[17]. Our study is in accordance to other studies where rural women are affected^{[6][18]}. The present study revealed the kitchen as the major site of the burn incidences in comparison to the outdoor incidences. The findings are in accordance with other studies^[17]. In the present study, a majority of the burn deaths were in the victims with >80 % burns and less numbers falling, 40% body surface are burns. Other studies conducted at northeast region show similar results^{[8][19]}. Present study shows Shock as the major cause of death followed by Septicaemia. Other studies done around various regions showed a difference in result where Septicaemia is the leading cause of death^{[8][20]}. Pain due to burns may cause neurogenic shock followed by hypovolumic shock due to larger extent of body surface area burns and less fluid restoration. After 72 hrs there is chance of microbial infection leading to Septicaemia. Complication of burn may lead to multi organ failure and eventually death.

Conclusion

Safety regarding fire use should be taught to all to avoid accidental injuries. Mass should be made aware, discouraging dowry deaths. Persons suffering from depressions may be encouraged for Psychiatric consultation. Dedicated burn units to treat patients including religious dressings to avoid contamination of wound should be made at every hospital. Better ICU facilities should be provided to treat multi organ failure.

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