Original Article

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Prevelance of Burn Deaths: A Retrospective Study

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Abstract

Introduction: Burns is one of the most common and the most devastating forms of trauma among the people, leading to severe morbidity and mortality. The causes of burns differ in different communities and a proper understanding of this could probably lead to the prevention of burn incidences and thereby lowering the rate of mortality. *Materials and methods:* This retrospective study was done on 155 patients whose cause of death was due to burns. The postmortem reports, inquests, panchnama of the scene of offence, other reports which were collected based on the information of friends and relatives were taken. The treatment history, suicidal tendency of the patient, were pursued and the data obtained was analyzed thoroughly. *Results:* The number of females (56.8%) that were affected were significantly higher than the males (43.2%). The predominant age group that was affected was between 21-30 years of age, followed by 31-40 years. Suicides accounted for the majority of the causes of deaths due to burns (50.9%), closely followed by accidental burns (44.5%). A total of 5.8% of the patients died on the spot and could not be resuscitated. Majority of the patients (46.5%) could not survive beyond 24 hours. *Conclusion:* Proper education regarding the care to be taken to prevent burns as well as the immediate care and first aid to be given to such patients should be given to prevent severe burn injuries and death.

Keywords: Burn deaths; Accidental burns; Suicides.

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Introduction

Burns is one of the most common and the most devastating forms of trauma among the people, leading to severe morbidity and mortality. Hence, it's one of the major global concerns of health [1,2]. According the World Health Organization, about 300,000 deaths occur due to burns annually and 57% of these occur in the South east Asia alone, with >95% being in the developing countries [3]. In India, burns is the second largest cause of injuries after road accidents. Around 7 million incidences of burns take place annually every yearin our country alone [4,5]. There is a high mortality rate among the people with >40% burns, with a survival rate of only 50%. Even in case of survival, the pace of recovery is very slow and painful. There may be a high rate of consequences such as disfigurement leading to sub-optimal working of the patient [6].

The causes of burns differ in different communities and a proper understanding of this could probably lead to the prevention of burn incidences and thereby lowering the rate of mortality.

This study was therefore conducted to understand the factors that may be the cause for burns and the outcome of these incidences.

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Materials and Methods

This retrospective study was done by the department of Forensic Medicine at Kakatiya medical college and Gandhi medical college over a period of two years. This study was cleared by the Institutional Ethical Committee. Case sheets of 155 patients whose cause of death was due to burns were included into the study. The postmortem reports, inquests, panchnama of the scene of offence, other reports which were collected based on the information of friends and relatives were taken. The treatment history, suicidal tendency of the patient, were pursued and the data obtained was analyzed thoroughly.

The percentage of burns on the patients and the artifacts found in the body were also analyzed.

Results

The number of females (56.8%) that were affected were significantly higher than the males (43.2%). The predominant age group that was affected was between 21-30 years of age (34.8%), followed by 31-40 years (20%). Children were the least affected and those who were accidentally affected (2.5%) (Fig. 1)

Suicides accounted for the majority of the causes of deaths due to burns (50.9%), closely followed by accidental burns (44.5%). 4.5% of the burn deaths were due to homicides (Fig. 2).

Majority of the patients were illiterate (45.8%), while 46 (29.7%) of them had more than high school education. Only 5 of them had primary level education all these 5 were children below the age

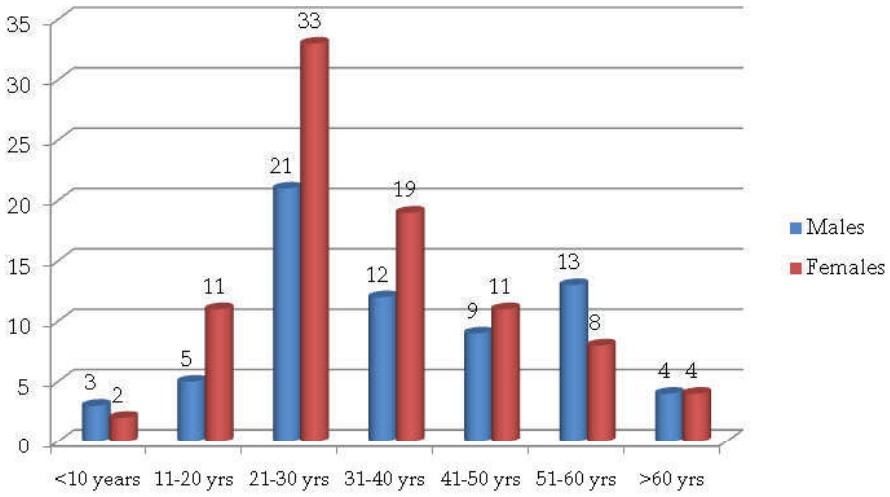

Fig. 1: Age and sexwise distribution of patients

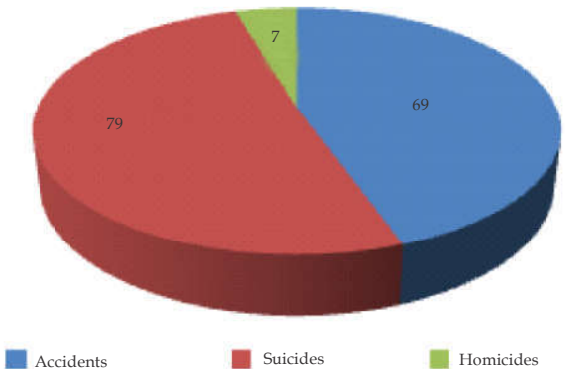

Fig. 2: Causes of death

of 10, with accidental burns. Many of these patients were suicidal cases, probably due to love failures or problems in marriages. Most of them were married (55.5%),while 67 (43.2%) were unmarried. Most of the patients belonged to the lower economic strata (73.5%), while most of the rest were from the middle income group (25.2%) (Table 1).

Table 1: Educational, Marital and socioeconomic status of patients

Status	Male	Female
Educational status		
Illiterate	30	41
Primary	3	2
High school	11	22
Post High school	23	23
Marital status		
Married	28	58
Unmarried	36	31
Widowed	4	1
Socioeconmic status		
Low income	43	71
Middle income	22	17
Upper income	2	0
Sophisticated	0	0

A total of 9 patients (5.8%) of the patients died on the spot and could not be resuscitated. Majority of the patients (46.5%) could not survive beyond 24 hours. Of these, most of the patients had more than 70% burns. 38 patients (24.5%) survived for 24-72 hours and most of these patients had 50-70% burns. Very few patients (7.7%) survived for >7 days and all these patients had <50% burns (Table 2).

Table 2: Period of survival in relation to burns

Period of survival	<30%	30-50%	50-70%	70-90%	>90%	Total
Spot death	0	0	0	3	6	9
<24 hours	0	2	9	34	27	72
24-72 hours	0	2	21	11	4	38
3 to 7 days	2	14	8	0	0	24
>7 days	1	11	0	0	0	12
Total	3	29	38	48	37	155

Discussion

In the present study, a higher percent of females were observed to be affected compared to the males. This was probably a more number of accidents occurred in the kitchen during cooking. A higher incidence of females involved in burn injuries was observed by Karaddi et al., who observed a 3:1 female to male ratio [7]. A study by He et al. observed 51% of the population to be females compared to the males [8]. Bansali et al. reported a male to female ratio to be 0.6 [9]. This high preponderance of females is mainly due to unsafe cooking practices and stoves. Other similar studies by Kumar et al. and Ahuja et al. also reported similar results [10,11].

The most common age group to be affected was 21-30 years of age followed by 31-40 years. This was the age, where people were more independently mobile and active. Women were more inexperienced near the fire. Similar results were observed in other studies such as with Buchade et al. [11], Karaddi et al. [7] and Das et al. [12]. Bansali et al. reported the majority of the age group to be affected by burns to be 12-26 years, Singh et al. reported two thirds of the fatalities to be in the 21-40 years age group. In some of the studies done earlier, it was observed that majority of the burns in children below the age of 4 occurred at home due to accidental burns near heating appliances especially in the colder seasons. These burns were typically on the upper arms and chest areas [14]. In joint families in countries such as in India, the incidence of burns among the children and the elderly was found to be lesser as there was a supervision by the other members of the families. Ages 15-35 were found to be more prone to burns than the other age groups [13]. 43% of the population in the study by He et al. was between 25 to 64 years [8]. However, most of the fatalities was seen below the age of 10 years and above 65 years.

Suicides accounted for the majority of the causes of deaths due to burns with 50.9% of the cases, closely followed by accidental burns in 44.5%. 4.5% of the burn deaths were due to homicides.Majority of the patients were illiterate (45.8%), while 46 (29.7%) of them had more than high school education. Only 5 of them had primary level education all these 5 were children below the age of 10, with accidental burns. Many of these patients were suicidal cases, probably due to love failures or problems in marriages. Most of them were married (55.5%), while 67 (43.2%) were unmarried. Most of the patients belonged to the lower economic strata (73.5%), while most of the rest were from the middle income group (25.2%). In a study by Castana et al on suicide deaths, it was observed that most of the patients were females and most were in low income status [15]. In many of the cases, a previous psychiatric history was observed while in our study, majority of the patients were either in depression or the suicide was preceded by an argument with family members [15].

A study by He et al. reported most of the burn patients to be married as in our study [8]. They observed that most of the burn injuries, both fatal and non fatal occurred in the kitchen during cooking. As in the present study, this study also

found most of the patients belonging to the lower economic status. A study by Edelman et al. reported that persons with low economic income, lack of proper education, overcrowding in the residential areas and unemployment were some of the risk factors which would cause an increase in the burn injuries [16]. In a study in Bangladesh, it was reported that the children form the low economic status were more often to die due to burn injuries than the other income groups [17]. In other studies in India and other Asian countries, unsafe practies of cooking such as those in open fire, unsafe stoves, using coals or petroleum, and butane were found to be the cause for burn injuries [18-21].

A total of 9 patients (5.8%) of the patients died on the spot and could not be resuscitated. Majority of the patients (46.5%) could not survive beyond 24 hours. Of these, most of the patients had more than 70% burns. 38 patients (24.5%) survived for 24-72 hours and most of these patients had 50-70% burns. Very few patients (7.7%) survived for >7 days and all these patients had <50% burns.

A study by Bansali et al. reported that in 37-53% of the patients, there were 97% of burns on the total body surface. 75% of the patients in this studies died within 5 days of burns, while 90% of them died within 8 days [9]. This increase in mortality among the patient with incresase in the total body surface burns was seen in other studies also [22-24]. Among children who had >45% of body surface burns had a higher rate of mortality than others [25]. Lack of appropriate health case and a delay in hospitalization was also a significant factor in death [18,22]. Similarly, total body surface area burns of 40-50% saw a death in 80% of the patietns in India, Albania and Saudi Arabia [10,26,27].

Conclusion

The present study shows the female population especially in the age group that involves domestic cooking to be the most prone to burn injuries followed by children and elderly who are not supervised. It seems to be more common among the lower economic strata persons. Thus, proper education regarding the care to be taken to prevent burns as well as the immediate care and first aid to be given to such patients is the need of the hour to prevent severe burn injuries and death.

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