Profile of the Fatal Burn Deaths from the Varanasi Region, India

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ABSTRACT

Background: Burn deaths are a major public health problem in our country. In India, about 60,000 people suffer from burns annually, more than 50,000 are treated in hospitals and about 10,000 succumb to thermal injuries.

Aims: To study the demographic and the injury profiles of the burn fatalities which were brought to the mortuary of the Department of Forensic Medicine.

Subject and Methods: All the autopsies of the burn victims which were performed between July 2009 and December 2010 were analyzed with respect to the age-gender distribution, religion distribution, marital status, educational status, place of occurrence, source of the fire, survival period, body surface area which was involved and the cause of death. From the observations and the analysis, certain aetiologies were elicited and preventive measures were suggested.

Results: A majority of the victims (83%) were females. The maximum number of the victims (59.6%) belonged to the age group of 15 to 30 years, with the least number of victims from the age groups of ≥ 45 years and ≤15 years i.e. 5.6 % cases respectively. A majority of the victims (98.3%) in this present study cases were Hindus. Most of the victims (83.9%) were married. A majority of the victims (49.2%) had obtained up to primary school level education. The uneducated victims still form a major group, amounting to 15.3% of the burn victims. The maximum number (43.5%) of the burn victims died due to burns which were caused by kerosene oil. Only 0.9% cases were observed, where petrol was used as the inflammable material. In the present study, it was observed that in 39.6 % cases, more than 90% of the body surface area was involved. Only 3.2% of the deceased were seen with burns which involved <50% of the body surface area. Septicaemia was observed as a major cause of death (50%) among the deceased.

Conclusion: The epidemiological factors of burn injuries vary in different countries. For planning and implementing prevention programs, the approach has to be multi-disciplinary and coordinated.

INTRODUCTION

Man has invented fire since times immemorial. The use of fire in various aspects has not only added to his comforts, but it also added to his miseries by increasing the risk of burns. Since ages, man has paid the price for his comforts in terms of thermal injuries. Since long, fatal burns have continued to be a major public health problem in India. In India, about 60,000 people suffer from burns annually, more than 50,000 are treated in hospitals and about 10,000 succumb to thermal injuries [1]. Microbial infections after burns, where a large portion of the skin is damaged, is a very serious complication that often results in the death of the patients. About 45% of the mortality in burns patients is caused by septicaemia [2].

Hence, this study was planned with a purpose to know the magnitude and the socio-cultural factors of the problem of burns, so that a sound prevention programme could be suggested, planned and implemented for reducing the incidence of fatal burns.

MATERIAL AND METHOD

The present study was conducted on burn victims of both the sexes, of different age groups, who were brought into the mortuary of the Department of Forensic Medicine and Toxicology, during the period from July 2009 to December 2010, for a medicolegal post-mortem examination, from various police stations of Varanasi and surrounding regions. A total of 124 burn cases were selected for an examination of socio-epidemiological features, in an effort to understand the dynamics which surrounded these deaths. The various epidemiological characteristics of the cases were obtained from police papers, post-mortem reports, the investigating officers and the relatives of the deceased. The data was recorded, compiled and analyzed statistically. The research protocol was approved by the local ethical committee and an informed consent was obtained from relatives of each victim prior to his/her inclusion in the study.

RESULTS

A majority of the victims (83%) were females. The maximum number of the victims (59.6%) belonged to the age group of 15 to 30 years, with the least number of victims in the age groups of ≥ 45 years and ≤15 years i.e. 5.6 % cases respectively [Table/Fig-1]. Further, it was observed that 11.3% victims were in the adolescent age group and that among them, a majority were female victims (78.8%). A majority of the victims (98.3%) in the present study were Hindus. Most of the victims (83.9%) were married and among them (88.5%) were females. Most of the victims (84.6%) were from rural areas and the rest (15.4%) belonged to urban areas. A majority of the victims (49.2%) had obtained up to primary school level education. Uneducated victims still amounting to 15.3% of the
Burn victims [Table/Fig-2]. Kitchen was reported to be the major culprit site of the incidence of the burns, accounting for 75% of the burn incidents, whereas in 13.8% of the cases, the incident had occurred outdoors [Table/Fig-3]. The maximum number (43.5%) of burn victims died due to burns which were caused by kerosene oil. Only 0.9% cases were observed, where petrol was used as the inflammable material [Table/Fig-4]. In the present study, it was observed that in 39.6% cases, more than 90% of the body surface area was involved. Only 3.2% of the deceased were seen with burns which involved <50% of the body surface area [Table/Fig-5]. Septicaemia was observed to be a major cause of death (50%) among the deceased [Table/Fig-6].

**DISCUSSION**

Burn injuries occur universally and they have plagued mankind since antiquity, till the present day. In all societies which include those in the developed or in the developing countries, burn pose not only medical and psychological problems, but they also produce severe economic and social consequences on the victims families and also on the society in general. An analysis of the sex record in the present study showed a female preponderance. The overall female predominance in this study conformed to the findings of some previous studies which were conducted in this region [3]. Females were more prone to the burn incidences because of their domestic activities which required an association with fire sources. Moreover, Indian women wore dresses like the sari and the salwar-kamiz with dupatta, which were often of synthetic material, which covered almost the whole body. Such clothes favoured aggravation of the burn injuries. These observations were in concordance with those of other studies from various regions of India [4-6, 8-9]. Some other studies, in contrast, showed a male predominance [10-12]. Out of the 124 studied cases, a majority were married victims who were in the 16 to 30 years age group and the least were in the extreme age groups i.e. below 15 years and above 45 years. Amongst the married burn victims, a majority were females. These results are consistent with the findings of other researchers [3, 5-10, 12-14] and they were in contradiction to the findings of the studies from other developed countries [15]. In developing countries like India, the preponderance of the married victims is probably because of the increasing familial stress due to day to day problems like unemployment, illiteracy and poverty, which together give rise to greater issues like marital disharmony and dowry. The unmarried victims group mostly included men of the adolescent age group and the reasons behind their deaths were rivalry, carelessness at the work place and frustration which arose due to a failure in love/ examinations. The present study revealed that the maximum number of victims were from rural areas, which was in accordance with the findings of other studies from various regions of India [5-9, 12-14]. They belonged to the Hindu community mostly and the reason behind this was the Hindu dominant population in the Varanasi region, which was in conformity with the findings of other
The early detection and treatment of microbial infections can reduce the mortality among the burn victims.

• Proper upgradation of the ICUs, burn-units and the transport facilities with recent techniques. Advanced modes of facilities are required to handle all the fatal cases.

So, as long as the problem of deaths by burns persist in India, the government needs to concentrate in this direction and the NGOs, social groups, and the workers need to put in more sincere efforts.

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