

## Electrical Burns: 5 Year Retrospective Study

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### Abstract

It was a 5 year retrospective study from January 2005 to December 2009. We analysed patients, who sustained electrical burns, admitted in the burns Ward under department of plastic surgery in Kasturba Medical College hospital, Manipal. Total of 303 cases were admitted during that period. Out of 303 patients 51 (16.8%) patients were admitted due to electrical burns. In our study Electrical burn was high in males (92%), as compared to females (8%). Majority of the patients were in the age group of 21-30 years (50%), followed by 41-50 years (19%) and 31-40 years (15%). Most common occurrence of electrical burn was work place (58%) in our study followed by outdoor (27%). In Electrical burns deep burns (33%) were common as compared to superficial burns (15%). Majority of the case happened during day time (86%).

**Keywords:** Electrical burns; Deep burns; Day time.

### Introduction

Electricity is the main part of the life. Electrical Injuries still produce significant morbidity and mortality. Approximately 1000 deaths per year are due to electrical Injuries in United States, with mortality rate of 3-5 %. Electrocutation remains one of the top five leading occupational killer in united states.[1,2] The spectrum of electrical injuries are very broad, ranging from minimal complication to severe multi organ dysfunction to death. Though Electrical Injuries are occurring mainly in the work place, It still occur in home and outdoors. The etiological factors for electrical injuries are vary in different places. Electrocutation is usually

accidental, of course suicidal cases of electrocution are also on record but this is a rare and unusual method. The majority of the electrical burns are as a result of ignorance, misuse or carelessness[3] while there is plenty of scope to reduce the incidence of burn. The aim of this study is to analyze the epidemiological characteristics in manipal and to prevent such incident in future.

### Materials and Methods

It was a 5 year retrospective study from January 2005 to December 2009. We analysed patients, who sustained electrical burns, admitted in the burns Ward under department of plastic surgery in Kasturba Medical College hospital, Manipal.

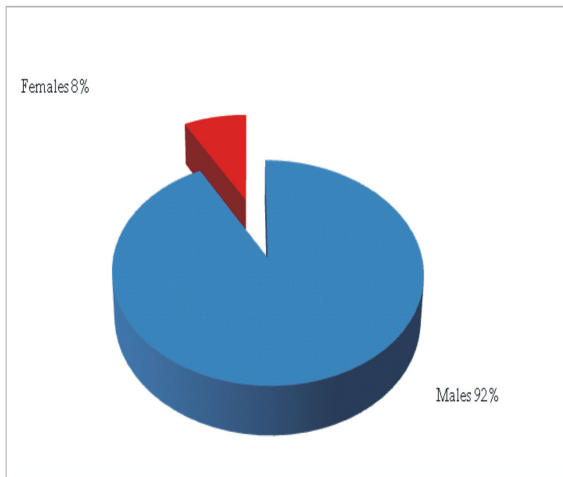
The information regarding age and sex of patients, type of burn, place of electrical burn, timing of electrical burn, depth of burns and cause of electrical burns were extracted from patients hospital files and was incorporated into our proforma.

Statistical analysis was done using SPSS software

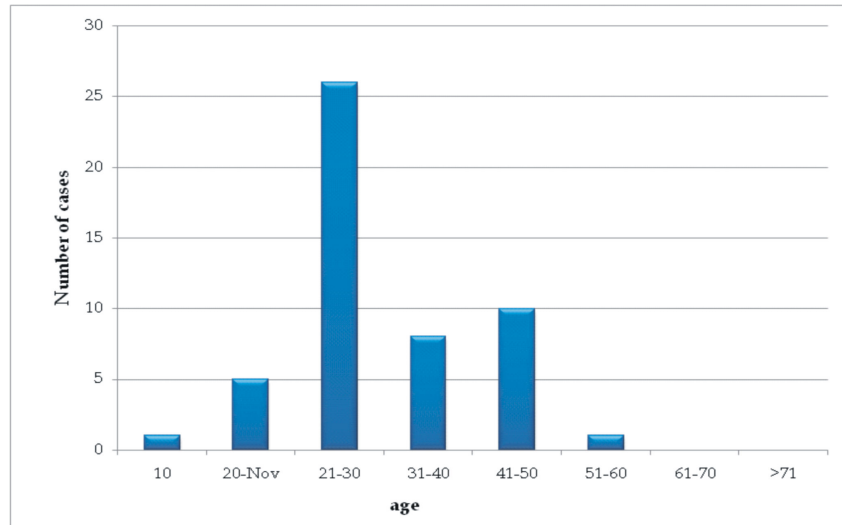
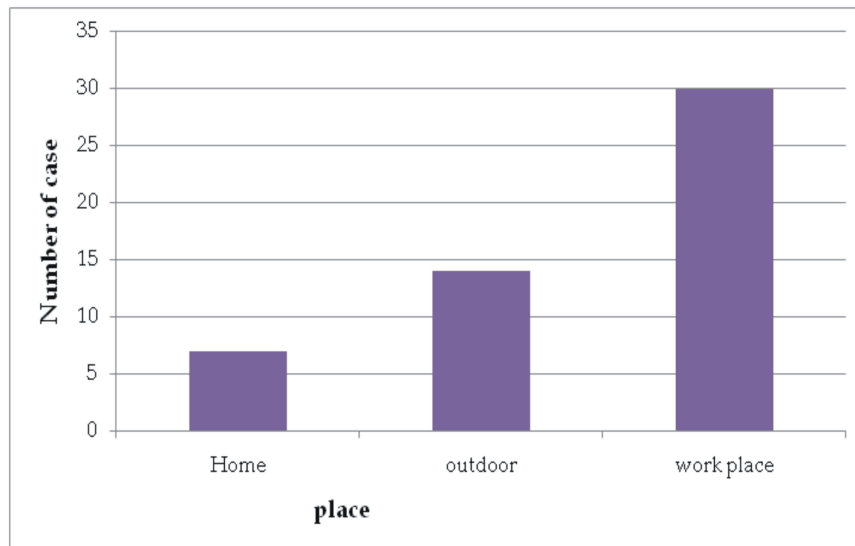
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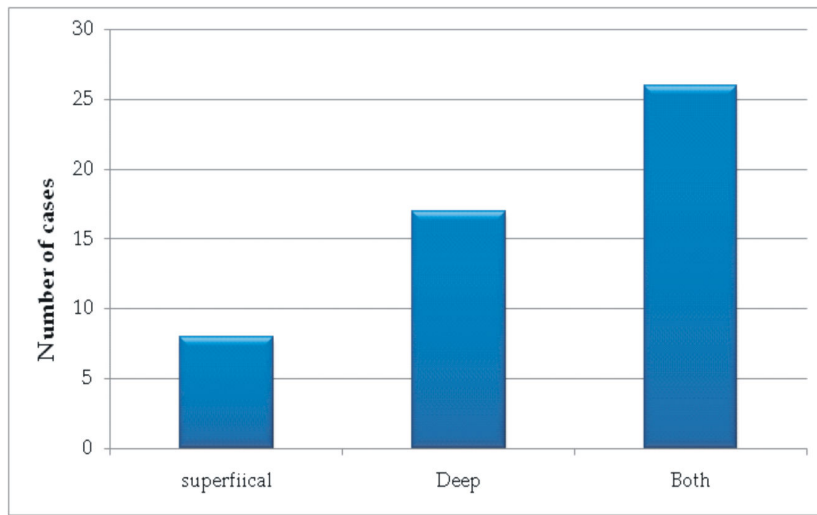
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**Graph 1: Gender Distribution****Results**

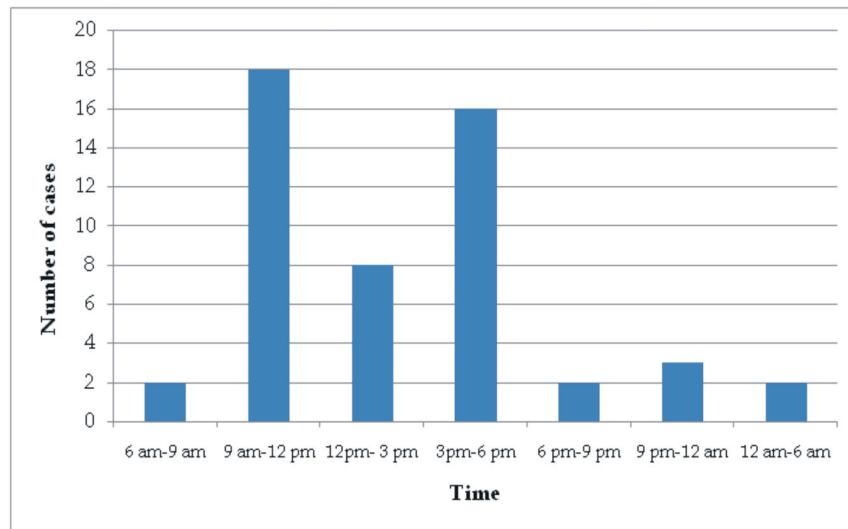
Total of 303 cases were admitted in the burns ward under the Department of Plastic Surgery, Kasturba Medical College, Manipal, during the period of 5 years from January 2005 to December 2009. Out of 303 patients 51 (16.8%) patients were admitted due to electrical burns. In our study Electrical burn was high in males (92%), as compared to females (8%) (Graph 1). Majority of the patients were in the age group of 21-30 years (50%), followed by 41-50 years (19%) and 31-40 years (15%) (Graph 2). Most common

**Graph 2: Age Incidence****Graph 3: Place of Burn**

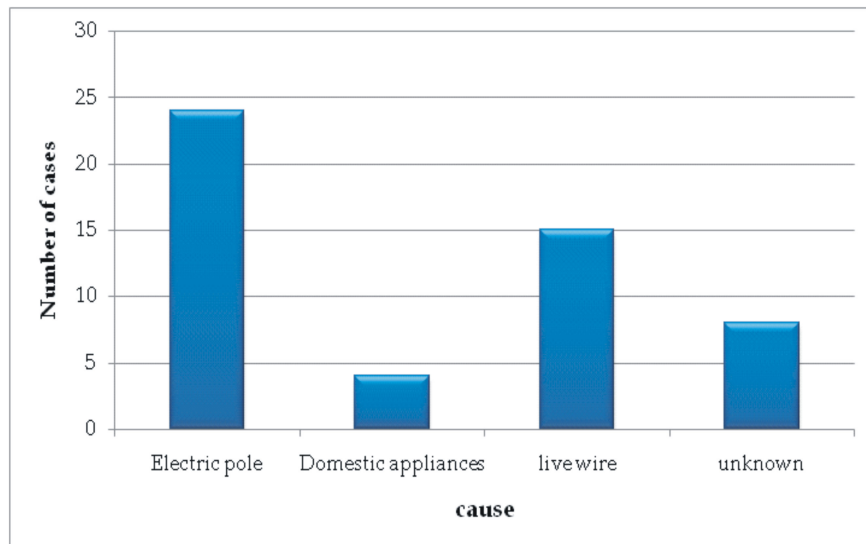
**Graph 4: Depth of Burn**



**Graph 5: Timing of Electrical Injuries**



**Graph 6: Cause of Electrical Injuries**



occurrence of electrical burn was work place (58%) in our study followed by outdoor (27%) (Graph 3). In Electrical burns deep burns (33%) were common as compared to superficial burns (15%) (Graph 4). Majority of the case happened during day time (86%) (Graph 5). The common source responsible for electrocution was electric pole (47%) (Graph 6), followed by wires and domestic appliances.

## Discussion

Out of 303 patients 51 (16.8%) patients were admitted due to electrical injuries.

Our results also showed a higher rate of electrocution in males (92%) as compared to females (98%) these findings are similar to studies conducted by Regula wick R *et al*[5] Preetinder singh *et al*[6] Manish shrigiriwar *et al*[7] which suggest that males are more exposed to the risk of electrical injuries, and hazardous situations both at home and at work place. Males are likely to use variety of electrical equipments in the work and domestic environment. This may be because many time in Indian scenario males are the only bread winners for the family.

In our studies cases were predominantly in the age group of 21-30 yrs (51%) which is consistent with studies done by kusa kumar shaha *et al*[8] and sheikhazadi *et al*[9] Rautji *et al*. [10] This age group people are actively involved in contact with the electric instruments like wires and accessories and attempt to repair the sudden failure of the instrument.

Most common place of occurrence of electrical injury is at work place (58%) in our study which is against study conducted by Yasar Tirasci *et al*[3] Abdolaziz Rastegar Lari *et al*[11] where home is the most common occurrence of place. The reason could be attributed to the fact that Electricians and builders who are working on electric lines or poles or on transformers are susceptible to the electrical injuries.

Eighty six percent of the electrical burns

were reported between at 9am-12 pm, as against 14 % who sustained during night time which can be explained by work related burns during day time. We observed in electrical burns, deep burns (33%) were common as compared with superficial burns (15%). Which were also reported by Analacti *et al*[13], Hadjiiski[14] and Mostafa hemada *et al*[15] who were required to stay for longer time and had severe complication because of deep burn injuries.

The most common source responsible for electrocution was electric pole (47%) followed by wires and domestic appliances which is against the study conducted by Preetinder singh *et al*<sup>6</sup> where electrocution was mostly from electric wires followed by switches.

## Conclusion

In our study male outnumbered female. Majority of the patients were in the age group of 21-30 years. Most common place of occurrence of electrical burn was at work place in our study. Most of the electrical burns were deep burns followed by superficial burns. Majority of the case happened during day time.

The first step towards a successful prevention of Electrocutation at work place is to educate and create awareness among the high risk groups comprising of the Electrician and workers who are at risk of exposure.

In Home young children should not be allowed to play with electrical equipments. Recent advances in the electrical safety equipment in the home and Industries will prevent from electrocution Injury.

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