

A Study of Incidence of Burn Injury Cases in Pediatric Age Group in Vindhya Region, Madhya Pradesh

Survind Kumar¹, Yogesh Kailasia², Priyank Sharma³, Sanjay Singh¹, Varsha Shukla¹, Vikash Jayant¹, Lekh Kumari Kurrey¹, A P S Gaharwar⁴

¹Junior Resident, Department of Surgery, Shyam Shah Medical College, Rewa, Madhya Pradesh, India, ²Assistant Professor, Department of Surgery, Shyam Shah Medical College, Rewa, Madhya Pradesh, India, ³Associate Professor, Department of Surgery, Shyam Shah Medical College, Rewa, Madhya Pradesh, India, ⁴Professor and Head, Department of Surgery, Shyam Shah Medical College, Rewa, Madhya Pradesh, India

Abstract

Introduction: Burn is a type of tissue injury produced on protective covering of body that may be caused by exposure to extremes of thermal, chemical, electrical, or radiation agents. Burn injury is a multifaceted, multidimensional injury which involves almost all systems of the body. Burn is one of the most common causes of unnatural deaths; it is a major cause of death in all medico-legal cases. Out of 3 million burn admissions per year in India, about 1 million die.

Aims and Objectives: The objective of the study was to report the incidence of pediatric burn injuries and describe the pattern and the trend of pediatric burns seen in Shyam Shah Medical College, Rewa, India.

Materials and Methods: Retrospective cross-sectional study was carried out in 96 patients of age group 0-14 years admitted in burn unit of surgical wards of S.S. Medical College and associated G.M.H and S.G.M. Hospital, Rewa (Madhya Pradesh) from August 1, 2015, to July 31, 2016.

Result: Among 475 patients admitted to burn unit during 12 months of the study, 96 patients were children aged <14 years; the incidence of burn injury among pediatric age group was found to be 20.21% of total burn cases.

Conclusion: The incidence and the severity of burn injuries remain high at the national level. Burn injuries continue to affect the pediatric population, predominantly, young children, which indicate the need for increasing parent educational programs and government regulations. Because we reported scald burns as the most common causes of burn injury, which are consistent with previous national reports, we recommend having legislation that focuses on scald burn prevention.

Keywords: Burn, Injuries, Pediatric, Scald

INTRODUCTION

Burn is a type of tissue injury produced on protective covering of body that may be caused by exposure to extremes of thermal, chemical, electrical, or radiation agents. Burn injury is a multifaceted, multidimensional injury which involves almost all systems of the body.

Burn is one of the most common causes of unnatural deaths; it is a major cause of death in all medico-legal cases. Out of 3 million burn admissions per year in India, about 1 million die. A severe non-fatal burn injury is the most devastating injury children can survive; this is because the young skin of a child tends to burn more quickly and deeply than adult skin and at lower temperature. Even though advances have been made in the techniques to improve care management, child physical recovery from deep partial- and full-thickness burn, the emotional and physical scarring of children last a lifetime.

Mortality is high in developing countries; the reason for this includes poor facilities and a dearth of personnel to manage burn patients. Poverty and ignorance are

Access this article online



www.surgeryijss.com

Month of Submission : 02-2017
Month of Peer Review: 03-2017
Month of Acceptance : 04-2017
Month of Publishing : 05-2017

Corresponding Author: Dr. Survind Kumar, Room No 22, P.G. Men's Hostel, Shyam Shah Medical College, Rewa - 486 001, Madhya Pradesh, India. Phone: +91-9430800629. E-mail: survind.chauhan@gmail.com

significant contributors to high mortality. This is because most of the people injured are from low and middle socioeconomic level of the society.

The effects vary according to type, intensity, and duration of burning agent, and part of body involved. Burn wound not only causes the disfigurement with physiological and psychological trauma to the patients or even fatal outcome but also causes catastrophic illness, catastrophic in cost, and suffering to the family involved. It has been the nature of man to try and to overcome the challenges based before him by nature.

In children burn due to hot liquid, Scalds is most common at home. Chief causative agents are hot water, milk, dal, tea, oil, vegetable, steam, other burns are cloth catching fire, electrical, thermal, chemical, firecracker, solar, lightning.

According to the census of India 2011, 72.18% of the population are living in rural area, most of the villagers are illiterate, ignorant, and poor, the people use open chimneys for lighting purpose.

The present study aims to analyze the different aspect related to burn injury in children and its preventive measure, magnitude of burn in children in India and Madhya Pradesh.

MATERIALS AND METHODS

The present study was carried out in 96 patients of age group 0-14 years admitted in the burn unit of surgical wards of S.S. Medical College and Associated G.M.H and S.G.M. Hospital, Rewa, (Madhya Pradesh) from August 1, 2015, to July 31, 2016.

Patients were admitted to the ward from surgery outpatient department or casualty department. On admission, a detail history was recorded regarding name, age, sex, religion, occupation, father occupation, education, date and time of admission, and discharge, referral, final outcome were noted in detail.

Examination and clinical assessment were done in the form of general condition total body surface area depth and associated illness. For defining the extent of burn, we used Wallace "Rule of Nine."

The data were obtained by questionnaire interview with the patients themselves, while in the case of children or patients who were not well enough as a result of severe

injury, the data were obtained from relatives who attending the burn unit through a questionnaire interview statistical analysis of various epidemiological parameters was done.

On the basis of analysis and observation, results were drawn and discussed and compared with other relevant literatures.

Statistical analysis of various epidemiological parameters was done.

1. Place where it occurred
2. Cause of burn injury
3. Mode of injury.

OBSERVATIONS AND RESULTS

In our study, out of 475 burn patients admitted to the burn unit, 96 (20.21%) were children aged <14 years (Table 1).

It is evident from Table 2 that male to female (ratio) was 0.92:1, whereas most common age group affected in both sex was 0-6 years and lowest in 7-10 years. The youngest male patient was 2 months, and female patient was 1 month old.

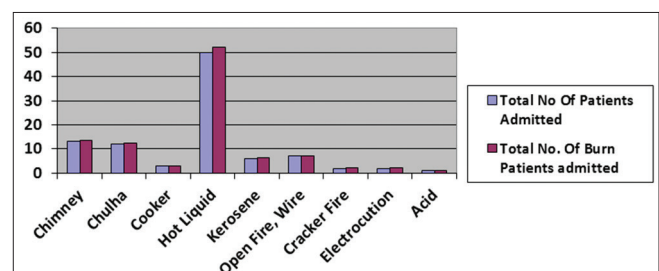
It is evident from Table 3 that majority of patients were Hindu 94.79%.

It is evident from Table 4 that the majority of patients were from the rural area (86.45%).

It is evident from Table 5 that the majority of patients were scald burn (56.25%), followed by flame (39.58%) and electric burn in (3.12%).

It is evident from Table 6 that majority of patients had an accidental burn (95.83%).

It is evident from Table 7 and Graph 1 that in the majority of burn cases, source of heat was hot liquid



Graph 1: Distribution of cases according to source of heat

Table 1: Incidence of all burn patients and children burn patients

Total number of patients admit in surgical ward	Total number of burn patients	Incidence (%)	Total number of burn patients <14 years	Incidence (%)
8796	475	5.40	96	20.21

(52.08%), the chimney was the second most common source (13.54%).

DISCUSSION

In our study, 8796 patients were admitted in surgical wards among which 475 patients had burn injuries. The total incidence of burn patients in the burn unit of surgical wards was 5.40%. A total of 96 patients under age of 14 years were admitted in burn unit of surgical ward which was 20.21% of total burn cases. This is almost similar incidence in Rewa, 39.6% reported by Bajpai¹ in 1982, 38.45% reported by Nema² in 1987. The incidence of burn was slightly higher in females than males, i.e., 50 cases were female children and 46 were male with male to female (ratio) of 1:1.08. As for as sex incidence is considered, Gupta *et al.*³ from S.M.S. Medical College, Jaipur (India), reported a higher incidence in male under 5 years age group due to scalds. Kumar *et al.*⁴ reported from Manipal (India), higher incidence in female (74.1%) than male children (25.9%) with sex ratio: 1.4:0.5. Kumar⁵ reported from Rewa, higher incidence in female (56.25%) than male (43.75) with M:F: 0.7:1. Kumar⁶ reported from Rewa, higher incidence in female 52.0% than male 48.0% with M:F: 0.9:1. The highest incidence was in 0-6 years age group which involves 30 cases out of 96 cases in which male was more, M: F: 1.2:1. The high incidence of children found in this age group. In our study, the female patient accounted for 52.08% of the total burn patients where male patient accounted for 47.91% with male to female sex: 0.92:1. In our study, a comparison between different religious communities was drawn, and it was found that majority of patients were Hindus (94.79%). In the observations, the common cause of burn that constitutes 56.25% are scald burn due to hot liquid (hot water, dal, tea, vegetable, cooking oil), next were due to flame 39.58% and electrical burns were 3.12% and only one case of chemical burn was recorded, which is consistent with the study by Shahin *et al.*,⁷ Libya, 1997 (moist heat-43.36%, dry heat-52.21%, chemical burn-3.53%, electrical burn-0.88%) and El-Badawy⁸ Egypt, 1998 (moist heat-56.7%, dry heat-38.6, chemical burn-1.6%, electrical burn 1.6%). In our study, accidental burns were maximum accounting for 95.83% of all cases, followed by homicidal cases 3.12% and suicidal burns were 1.04% recorded, which is consistent with the incidence reported in other studies such as Kumar *et al.*,⁶ Rewa 2011 (Accidental-95.33%, Suicidal-2%, Homicidal-0.66%), Jaiswal *et al.*⁹ Indore (Accidental-67.7%, Suicidal-18.9%, Homicidal-2%), and Mir *et al.*¹⁰ Kashmir 2012 (Accidental-87%, Suicidal-9%, Homicidal-4%).

CONCLUSION

Burn injury is the leading cause of death in children of all ages. Children with burn injury have the slowest recovery; furthermore, burn injury of children

Table 2: Age- and sex-wise distribution

Age in years	Male (%)	Female (%)	Total (%)
0-6	30 (65.22)	25 (50.0)	55 (57.29)
7-10	09 (19.56)	10 (20.0)	19 (19.79)
11-14	07 (15.22)	15 (30.0)	22 (22.92)
Total	46 (100.0)	50 (100.0)	96 (100.0)

Table 3: Distribution of cases according to religion

Religion	Total number of patients (%)
Hindu	91 (94.79)
Muslim	05 (5.21)
Total	96 (100.0)

Table 4: Distribution of cases according to residential status

Residence	Total number of patients (%)
Rural	83 (86.45)
Urban	13 (13.55)
Total	96 (100.0)

Table 5: Distribution of cases according to cause of burn

Cause of burn	Total number of patients (%)
Flame	38 (39.58)
Scald	54 (56.25)
Electric/electrocution	03 (3.12)
Chemical	01 (1.04)
Total	96 (100.0)

Table 6: Distribution of cases according to mode of injury

Age in years	Total number (%)
Accidental	92 (95.83)
Suicidal	01 (1.04)
Homicidal	03 (3.12)
Total	96 (100.0)

Table 7: Distribution of cases according to source of heat

Source of burn	Total number of patients admitted	Total number of burn patients admitted
Chimney	13	13.54
Chulha	12	12.50
Cooker	03	03.13
Hot Liquid (dal, water, milk, oil, tea, vegetable)	50	52.08
Kerosene	06	06.25
Open fire, wire	7	07.29
Cracker fire	2	02.08
Electrocution	2	02.08
Acid	01	01.04
Total	96	100.0

dramatically affects the economy because of expenses for medical care rehabilitation and costs related to the inability of the children to function independently in

society. Therefore, injury prevention should be a priority for everyone.

REFERENCES

1. Bajpai AX. A Retrospective Clinical Study of Burns. Thesis for MS. (General Surgery) A.P.S.U. Rewa; 1983.
2. Nema SK. Thesis on a Clinical Study of the Surgical Problem in Children. A Thesis Submitted for MS APS University Rewa (Madhya Pradesh); 1983.
3. Gupta M, Gupta OK, Goil P. Paediatric burns in Jaipur, India: An epidemiological study. *Burns* 1992;18:63-7.
4. Kumar P, Chirayil PT, Chittoria R. Ten years epidemiological study of paediatric burns in Manipal, India. *Burns* 2000;26:261-4.
5. Kumar M. A Clinical Study of Surgical Problems in Children. A Thesis Submitted for MS APS University Rewa, (Madhya Pradesh); 2007.
6. Kumar A. A Thesis Entitled Epidemiology of Burn Injury in Children. A.P.S. University Rewa M. P; 2011.
7. Shahin A, Shadata G, Franka MR, Abusetta A, Brogouski A, Ezzaidi MM, *et al.* Complications of burns in children-A study of 266 severely burned children admitted to a burns centre. *Ann Burns Fire Disasters* 1998;11:34-6.
8. El-Badawy A, Mabrouk AR. Epidemiology of childhood burns in the burn unit of Ain Shams University in Cairo, Egypt. *Burns* 1998;24:728-32.
9. Jaiswal AK, Aggarwal H, Solanki P. Epidemiological and socio-cultural study of burn patients in M. Y. Hospital, Indore, India. *Indian J Plast Surg* 2007;40:158-63.
10. Mir M, Anjum S, Mir R, Sheikh G, Mir M, Reshi F. Etiological and demographic profile of burn injury in Kashmir valley. *Internet J Plast Surg* 2012;8:1-5.

How to cite this article: Kumar S, Kailasia Y, Sharma P, Singh S, Shukla V, Jayant V, Kurrey LK, Gaharwar APS. Incidence of Burn Injury Cases in Pediatric Age Group in Vindhya Region, Madhya Pradesh. *IJSS Journal of Surgery* 2017;3(3):18-21.

Source of Support: Nil, **Conflict of Interest:** None declared.