

## PATTERN OF DISTRIBUTION AND DEMOGRAPHIC PROFILE OF BURN INJURIES WITH ASSESSMENT OF VARIOUS FACTORS AFFECTING MORBIDITY AND MORTALITY IN VINDHYA REGION, SGM HOSPITAL REWA, MADHYA PRADESH, INDIA

Mayank Jain<sup>1</sup>, Rachna Gupta<sup>2</sup>, Lalmani Singh<sup>3</sup>, Ambrish Mishra<sup>4</sup>, Sandeep K. Ahirwar<sup>5</sup>, Kiran A. Urabinahatti<sup>6</sup>, Suvriti Chaurasiya<sup>7</sup>, A. P. S. Gaharwar<sup>8</sup>

<sup>1</sup>Resident, Department of General Surgery, Shyam Shah Medical College, Rewa.

<sup>2</sup>Associate Professor, Department of General Surgery, Shyam Shah Medical College, Rewa.

<sup>3</sup>Assistant Professor, Department of General Surgery, Shyam Shah Medical College, Rewa.

<sup>4</sup>Assistant Professor, Department of Community Medicine, Shyam Shah Medical College, Rewa.

<sup>5</sup>Senior Resident, Department of General Surgery, Shyam Shah Medical College, Rewa.

<sup>6</sup>Resident, Department of General Surgery, Shyam Shah Medical College, Rewa.

<sup>7</sup>Resident, Department of General Surgery, Shyam Shah Medical College, Rewa.

<sup>8</sup>Professor & HOD, Department of General Surgery, Shyam Shah Medical College, Rewa.

---

### ABSTRACT

---

#### BACKGROUND

Burn injuries are one of the most devastating injuries resulting into higher morbidity and mortality rates. Its higher incidence in developing countries like India creating a formidable health problem.

#### OBJECTIVE

To study the pattern of distribution of burn injuries in relation to various epidemiological, demographic and socio-cultural aspect and their impact assessment on mortality and morbidity.

#### MATERIAL AND METHODS

It was a prospective 1-year study conducted in all patients (n=499) admitted in Burn Unit of Dept. of Surgery, SGMH, Rewa (M.P.), during the period August 2014-July 2015. The data regarding sex, age predisposition, geographical origin, mode and nature of injury were obtained by questionnaire-interview with the patient themselves. Clinical assessment was done in the form of depth and extent of injury. The information obtained was tabulated and analysed, mean, Standard Deviation (SD) were calculated where applicable. Chi-square test was used as a test of significance.

#### RESULTS

Incidence of burn injury was 6.02% out of total surgical ward admission. Females were 59.31%, while males were 40.68%. Majority 45.9% of patients were from 15-29 years' age group; 83.5% victims belonged to rural areas and 88.37% patients were below poverty line. Housewives 39.67% followed by students 23.24%; 87.7% was accidental followed by suicidal 9%, homicidal 3.2%. Flame burn 71.74% was commonest and chimney 28.1% was most common source of heat. 54.7% of cases were hospitalized within 5-12 hours of injury. Mean TBSA was 45.3%, it was higher in intentional burns and females. Kitchen 67.53% was the commonest place. 67.13% of burns were superficial to deep. Mean hospital stay was 11.63 days. Overall mortality was 39.47%, septicemia 56.85% was the most common cause of death.

#### CONCLUSION

Female sex, accidental, extensive burn, young age, low socioeconomic status, rural area were the factors associated with increased mortality and morbidity. Preventive measures should be multidisciplinary and coordinated.

#### KEYWORDS

Burns, Epidemiology, Mortality.

---

**HOW TO CITE THIS ARTICLE:** Jain M, Gupta R, Singh L, et al. Pattern of distribution and demographic profile of burn injuries with assessment of various factors affecting morbidity and mortality in Vindhya region, SGM Hospital Rewa, Madhya Pradesh, India. J. Evolution Med. Dent. Sci. 2016;5(30):1532-1536, DOI: 10.14260/jemds/2016/361

---

#### INTRODUCTION

Burn injury is the third leading cause among the total accidental deaths in India. Developing countries especially like India have a higher incidence of burn injury creating a formidable health problem.

In India with a population of over 1 billion, there are about 3 million admissions of burn patients annually. Burn injury is being presented now as an endemic hazard. Burn injury is a multidimensional injury involving all the systems of body and deranges all functions in one way or other depending on extent of injury resulting in higher morbidity and mortality. Because of the dramatic physical effect of burn injury, deleterious psychological complications occur to patient and family. It also affects the patient, financial condition of the family adversely.

The treatment of burn injury patients remains a challenging problem due to poor medical facilities, lack of public awareness, safety measures, lack of trained

---

*Financial or Other, Competing Interest: None.*

*Submission 22-02-2016, Peer Review 18-03-2016,*

*Acceptance 23-03-2016, Published 13-04-2016.*

*Corresponding Author:*

*Dr. Mayank Jain,*

*Boys P. G. Hostel, Room No. 22,*

*Sanjay Gandhi Memorial Hospital Campus,*

*Rewa, Madhya Pradesh.*

*E-mail: dr.mayankjain.mgmmc07@gmail.com*

*DOI: 10.14260/jemds/2016/361*

---

professionals, lack of specialized burn units at many centres and long course of illness and high incidence of short- and long-term complications. Prevention is still the best mode of treatment.

Hence, this study was planned with the purpose to know the magnitude, pattern of distribution, socio-cultural aspect of burn injuries, various risk factors associated and to identify high risk group to know mortality associated with burns and factors affecting mortality and morbidity. So that a better prevention program could be suggested, planned and implemented for reducing the incidence of fatal burns.

**MATERIAL AND METHODS**

This is a prospective study carried out on burn all 499 patients admitted in burn unit in Department of Surgery, S.S. Medical College and associated G.M.H. and S.G.M. Hospital, Rewa from 1<sup>st</sup> August 2014 to 31<sup>st</sup> July 2015.

Burn patients were admitted through OPD or causality brought by 108 ambulance.

**Inclusion Criteria**

1. All patients admitted in burn unit.
2. No. of patients: 499 admitted patients during period of study.

**Exclusion Criteria:** NA.

**On Admission and Quick General Survey and Prompt Resuscitation Details of Patient Regarding**

1. Registration: Name, age, sex, residence, occupation, marital status and socio-economic status were recorded.
2. Circumstances of the injury: Place, intent, cause and source of heat were enquired.
3. Examination and Clinical assessment was done in form of general condition, TBSA (Total Body Surface Area) clinical assessment of depth and associated illness. For defining the extent of burn, we used Wallace "Rule of Nine."

Patients admitted in burn unit were investigated to guide and monitor treatment. The data was obtained by questionnaire-interview with the patients themselves; while in case of children or patients who were not well enough as a result of severe injury, the data was obtained from relatives who attending the burn unit through a questionnaire interview.

Statistical analysis of various epidemiological parameters was done with SPSS software. The ethical clearance was obtained from Institutional Ethical Committee.

**RESULTS**

Sl. No.	Characteristics	Total	Male	Female	Test of Significance	
1.	Number of Patients	499	203	296	-	
2.	Age	<5	79 (15.8%)	46	33	$\chi^2=18.81$ 5df P<0.001
		6-14	53 (10.4%)	22	31	
		15-29	229 (45.9%)	77	152	
		30-45	103 (20.6%)	39	64	
		46-59	21 (4.2%)	10	11	
	>60	14 (2.6%)	09	05		
3.	Residence	Rural	419 (83.9%)	162	257	-
		Urban	80 (16.03%)	41	39	
4.	Socio-Economic Status	BPL	441 (88.37%)	-	-	-
		APL	58 (11.62%)	-	-	
5.	Mode of Burns	Accidental	438 (87.7%)	180	258	$X^2=3.346$ 2df P=0.188
		Suicidal	45 (9.0%)	14	31	
		Homicidal	16 (3.2%)	9	7	
6.	Cause of Burns	Flame	358 (71.7%)	109	249	$X^2=63.125$ 3df P<0.001
		Scald	91 (18.2%)	53	38	
		Electrical	46 (9.2%)	37	09	
		Chemical	4 (0.8%)	04	00	
7.	Depth of Burns	Superficial	144 (28.8%)	75	69	$X^2=15.64$ 2df P<0.001
		Superficial to Deep	335 (67.1%)	116	219	
		Deep	20 (4.0%)	12	8	

*Table 1: Gender Wise Distribution of Burn Injuries according to Various Factors*

Sl. No.	Characteristics	Total	Expired	Case Fatality Rate	Odds Ratio	Test of Significance	
1.	Sex	Male	203	72 (36.54%)	35.46%	Ref. Group	$X^2=2.03$ 1df P=0.154
		Female	296	125 (63.45%)	42.22%	0.75	
2.	Age	<5	79	13 (6.5%)	16.5%	Ref. Group	$X^2=42.64$ 5df P<0.001
		6-14	52	9 (4.6%)	17.3%	1.06	
		15-29	229	110 (55.8%)	48.1%	4.69	
		30-45	103	53 (26.9%)	51.4%	5.38	
		46-59	21	6 (3.0%)	28.6%	2.03	
	>60	13	6 (3.0%)	46.15%	4.35		
3.	Mode	Accidental	438	159 (80.7%)	36.3%	Ref. Group	$X^2=16.51$ 2df P<0.001
		Suicidal	45	30 (15.2%)	66.6%	3.50	
		Homicidal	16	8 (4.06%)	50.0%	1.75	

4.	Cause	Flame	358	185 (93.97%)	37.07%	23.52	X2=79.57 3df P<0.001
		Scald	91	10 (5%)	11%	2.71	
		Electric	46	02 (1.0%)	4.3%	Ref. Group	
		Chemical	04	-	-		
5.	TBSA	1%-25%	187	4 (2.0%)	2.1%	Ref. Group	X2=301.02 3df p<0.001
		26%-50%	111	27 (13.7%)	24.54%	14.96	
		51%-75%	86	54 (27.4%)	62.79%	77.62	
		76%-100%	115	112 (56.96%)	97.4%	1717.3	

**Table 2: Mortality Pattern in Burn Injuries according to Various Factors**

Characteristics		Mean TBSA (Average TBSA 45.33%)	Mean Hospital Stay (Average 11.63 days)
Sex	Male	11.40	33.56
	Female	11.68	53.5
Age	0-5 years	9.88	23.94
	6-14 years	11.12	27.17
	15-29 years	11.95	52.81
	30-45 years	13.30	56.23
	46-59 years	10.2	31.57
	>60 years	6.9	57.38
Cause	Flame	12.25	56.09
	Scald	8.40	20.03
	Electrical	13.04	15.82
	Chemical	5.75	15.00
Intent	Accidental	11.76	42.63
	Suicidal	11.22	71.2
	Homicidal	7.26	51.6
Outcome	Recovered	15.57	23.19
	Expired	7.24	75.72
	DOR	6.34	38.76
	LAMA	1.00	15

**Table 3: Mean Total Body Surface Area Burnt and Hospital Stay according to Various Factors**

Sl. No.	Condition on Discharge	Total Cases	Percent %
1.	Recovered	260	52.10%
2	Expired	Septicemic Shock	112 (56.85%)
		Hypovolemic shock	72 (36.54%)
		Pneumonia	4 (2.0%)
		Others	9 (4.56%)
3.	Discharge on request/Refer	32	6.4%
4.	Absconded	10	2.0%

**Table 4: Outcome of Burn Injury and Cause of Death**

- Overall incidence of burn patients admitted was 6.02% out of total admissions in surgical ward during the year. Highest incidence of burn admissions was seen in the month of March 2015 (8.9%) followed by October 2014 and May 2015 (7.3%) and November 2014 (7.2%).
- In gender wise distribution of total patients admitted, females (59.31%) were more than male (40.68%) population with female-to-male ratio 1.45:1.
- Patients of age group (15-29 years) formed majority of admitted patients (45.9%) followed by 30-45 years' age group (20.6%), then 0-5 years' age group (10.4%). Elderly population have lesser incidence rate 46-59 years (4.2%) and >60 years (2.6%). Females are predominant in all age groups except extremes of ages, i.e. 0-5 years (male 58.2%) and >60 year (male 69.2%). The results were highly significant ( $\chi^2=18.81$ , 5df,  $p<0.001$ ).

- Majority (83.9%) of burn patients were from rural background; 16.03% cases were from urban background.
- Majority of patients belonged to lower socioeconomic strata of the society that is below poverty line (88.37%) (Govt. BPL Card Holder). Above poverty line patients contributed 11.62% of total cases.
- On basis of occupational distribution, Housewives (39.67%) were commonest and next common were students (23.24%), children below age of 5 years were 15.83%, labourers were 9.2%, farmers 4.8%. Electricians were 0.8% of total burn patients, which represent an occupational hazard.
- Majority of burn are accidental (87.7%) in nature, while intentional burn accounts for suicidal (9%) and homicidal (3.2%). Females are predominant in both accidental (58.9%) and suicidal (68.8%) cases with male dominance in homicidal (56.2%) mode of burn. The results were not statistically significant ( $\chi^2=3.346$ , 2df,  $p=0.188$ ).
- Flame burns (71.74%) was the most common cause followed by scald (18.23%) and electric (9.2%). Female population (69.55%) were the most common victim of flame burn, while male population were more in scald (male 58.24%) and electric (male 80.43%). In our study all chemical burn patients were male, while its overall incidence is very less, i.e. 0.8%. The results are statistically significant ( $\chi^2=63.125$ , 3df,  $p<0.001$ ).
- The most common source of heat in flame burns were chimney (28.1%) followed by hot liquids 17.3% and kerosene 15.3% and chulha 12.2% of cases.
- Total body surface area burnt was not normally distributed, ranged from 1%-100% (Median 40% Mean 45.33%,  $SD\pm 31.4\%$ ). Patients having TBSA <10% accounted for majority of cases 15.6%, followed by TBSA 11-20% (15.4%) and TBSA 91-100% (11.2%).
- Majority of the burn patients clinically had Superficial+Deep burns (67.13%). These burns usually involved the larger TBSA. Superficial burns were seen in 28.85% cases and deep burns were 4.0% out of total burn cases. The difference of degree of burn among male and female were statistically significant ( $\chi^2=15.64$ , 2df,  $p<0.001$ ).
- Majority of burn injury incidents occurred in domestic environment, where the kitchen was the most common place of burn injury 67.53% of cases followed by living room 22.64%.
- Hospital stay was not normally distributed, ranged from few hours to 67 days. Mean hospital stay was 11.63 days.

**Relationship of Various Factors with Mortality**

- Gender: Females (63.45%) had a higher case fatality rate 42.22% than males 36.54%, but it is not statistically significant. (OR 0.75, 95% CI 0.52-1.08).

- Age: Highest case fatality rate in relation to age group found amongst patients aged 30-45 years (51.4%), least CFR was seen with 0-5 years (16.5%); compared with 0-5 years' age group patients 30-45 years were more likely to die (OR 5.38, 95% CI 2.64-10.94).
- Cause: There was a significant association ( $\chi^2=79.57$ , 3df,  $p<0.001$ ) between case fatality rate with cause of burn. Flame burn has a highest case fatality rate (37.07%) followed by scald (11%), electric burn (4.3%). Compared with electric burn, flame burns were most likely to result in death (OR 23.52, 95% CI 5.61-12.95).
- Mode: There was a significant association ( $\chi^2=16.51$ , 2df,  $p<0.001$ ) among the intents of burn and mortality. Suicidal burns have highest case fatality rate (66.6%) followed by homicidal (50.0%) and accidental (36.6%). Compared with accidental burns, suicidal burns were more likely to die (OR 3.50, 95% CI 1.83-6.72).
- TBSA: That increase of TBSA burn significantly ( $\chi^2=301.02$ , 3df,  $p<0.001$ ) increase the case fatality rate, thus highest case fatality rate (97.4%) seen in 76%-100% TBSA. Compared with 1%-25% TBSA, patients having 76%-100% TBSA burn were most likely to die (OR 1717.3, 95% CI 377.24-7817.9) which is highly significant.
- 68 (34.5%) death occurred within 3 days of admission and 151 (76.63%) death occurred within 7 days of hospital stay.
- In our study, most of the patients were recovered (52.10%) during treatment; 39.47% of cases were expired. Only 6.4% of cases discharged on request/refer while 2.0% of cases absconded during the treatment.
- Septicemic shock was the most common cause of mortality comprising 56.85% of total cases followed by hypovolemic shock (36.54%) predominantly in immediate post burn time period, Pneumonia (4%) responsible for delayed death in post-burn period and others causes like cardiogenic shock, ARDS, DVT, thromboembolism, etc.

## DISCUSSION

In present study maximum number of patients were females (59.3%), because females are usually involved in domestic works like cooking, etc. Domestic responsibilities of females plays important role in female predominance. Results are consistent with previous studies Chakraborty et al.<sup>[1]</sup> reported 61.5% females. Deshpande.<sup>[2]</sup> reported 59% females. Highest incidence of burn patients was in young adults (15-29 years) age group, which involved 229 cases (45.9%), which indicate greater exposure to burn agent in these age groups. P. Kumar (1997).<sup>[3]</sup> and Gowri Shankar (2000).<sup>[4]</sup> reported similar results. Majority of patients belonged to lower socioeconomic strata of the society, that is below poverty line (88.37%). Because of lack of basic facilities like safe cooking devices, electricity and education level lead them to contribute largely.

In our study, patient from rural population (83.4%) contributed for larger proportion of burn patients. Majority of Indian population lives in villages (About 80%) and still lacking basic facilities like electricity, LPG chulha, modern cooking appliances, etc. and also the poverty and illiteracy. M. J. Akhtar (2003).<sup>[5]</sup> and M. Mir (2012).<sup>[6]</sup> reported similar pattern. Occupationally housewives (39.7%) were most

common victims because of lack of safe cooking facilities, loose synthetic garments, Purdah, veil over face, multitasking, social ignorance, domestic violence and social stigma of dowry are also major factors for intentional burn injuries in housewives.

In present study, accidental burns were maximum accounting for 87.7% of all cases followed by suicidal cases 9% and homicidal burns were 3.3% recorded. As most of other studies done in various demographic areas shows that the accidental mode of burn was commonest because of hurry, lack of safety devices in occupational set ups, multitasking behaviour. Majority of burn injury incidents occurred in domestic environment, where the kitchen was the most common place of burn injury 67.53% of cases followed by living room 22.64%, as most of the burn victims were from rural population having congested rooms and lack electricity.

Ashok K Gupta et al. (2007).<sup>[7]</sup> reported that 72% of cases of burn occurred in closed spaces of which 52% in kitchens. Mostafa Hemeda et al. (2001).<sup>[8]</sup> Ashish K Jaiswal et al. (2006).<sup>[9]</sup> reported home as most common place of burn. In present study causes of burn as recorded flames burns were 71.74%, scald 18.23%, electric burns were 9.2%, chemical 0.8%. Cooking practices and lightning in rural households use chimney, chulha, kerosene in large scale results in larger proportion of flame burns. Spillage of hot liquids in children age group occurred due to ground level cooking practices and negligence of working parents. Chimney 28.1% was the leading source of heat in present study. Commonly used chimneys are indigenously/home made in bottles of glass or tin jar, in which kerosene is used as a burning agent. In our study, TBSA was randomly distributed. It ranges from 1-100%. Mean TBSA was 45.33% and median 40%.

Among percentage groups commonest group was TBSA <10% contributed for 15.6% cases, followed by TBSA (11%-20%) accounted for 15.4% and TBSA >90% accounted for 11.2% of cases. Females (53.5%) had more TBSA burns than males (33.56%). In age group distribution, adult population had larger burn TBSA 30-45 years (56.23%), 15-29 years (52.81%). Flame burns had larger mean TBSA (56.09%) other causes. Intentional modes of burn injuries accounted for larger burnt TBSA, suicidal (71.2%) and homicidal (51.6%) than accidental (42.6%). Patients those who died (75.72%) during treatment have larger mean TBSA than who survived (23.19%). P Kumar (1991).<sup>[3]</sup> reported mean and median TBSA were 53.02% and 52.0% respectively. S Lal (2013).<sup>[10]</sup> reported that mean TBSA in their study was 77.57%. In Egypt, Mostafa Hemeda (2001).<sup>[8]</sup> reported the mean TBSA was 32±5.7%. Results of our present study are consistent with previous studies at various places.

No significant difference was recorded in results in relation to TBSA. Hospital stay was not normally distributed, ranged from few hours to 67 days (Mean hospital stay was 11.63 days). Shorter hospital burns were noted in scald (Mean 8.40 days) and for chemical burn (Mean 5.40 days) and longer stay for flame (Mean 12.25) and electric burns (Mean 13.75) may be due to larger TBSA and deeper involvement. Shorter stay was observed in intentional burns homicidal (Mean 7.26) and suicidal (Mean 11.22), because they have extensive burn and expire early. Longer hospital stay was observed in patients those who survived (Mean 15.57), while shorter stay was seen in those who expired

(Mean 7.24) because most of the deaths occurred within 1 week of admission. K Soltani (1998).<sup>[11]</sup> reported that mean length of hospitalization was 12 days. Akhtar J M (2010).<sup>[5]</sup> in their study reported that mean duration of hospital stay in all patients was 13.6 days. This was 13.1 days for male group and 14.4 days for female group. Mean duration for patients who died was 7.7 days and for those who survived it was 18.7 days.

In our study out of total 499 burn admissions during the year, 197 patients expired during the course of treatment resulting in the Total mortality rate of 39.47%. Case fatality rate was 56% in study by Marsh D (1993).<sup>[12]</sup> in Karachi. Ashok K Gupta (2007).<sup>[7]</sup> reported 40% mortality rate. Mukerji G.<sup>[13]</sup> reported 21.8% mortality rate among total burn admissions. S Lal (2013).<sup>[10]</sup> reported high risk categories involves female sex, flame burns, intentional mode of burn, extensive TBSA involved. In our study, most (52.10%) of the patients survived and (39.47%) expired and (6.4%) patients either discharged on request or referred to higher centre, while (2%) burn patients absconded from burn unit. Better survival rate was because of larger proportion of patients have lesser TBSA burn, easy and early access to health centre, improved referral facilities like 108 ambulance, increased awareness towards available health facilities, etc. Septicaemia (56.85%) was the most common cause of death followed by hypovolemic shock (36.54%), pneumonia in (2.0%) of cases and other causes accounted for (4.56%) of cases. Due to larger TBSA, late presentation, increased antibiotic resistance, lack of cradles, lack of proper hygiene, overburdened burn unit results in increased rate of wound infection thus leading to septicaemia.

#### REFERENCES

- Sumanta Chakraborty, Sukamal Bisoi, Dipankar Chattopadhyay, et al. A study on demographic and clinical profile of burn patients in an apex institute of West Bengal. *Indian J Public Health* 2010;54(1):27-29.
- Jayant D Deshpande, Padmakar K Baviskar, Deepak B Phalke. Epidemiological study of hospitalized burn patients in rural area. *International Journal of Biomedical and advance Research* 2012;3(4):263-267.
- Kumar P, Chaddha A. Epidemiological study of burn cases and their mortality experiences amongst adults from a tertiary level care centre. *Indian Journal of community Medicine* 1997;22(4):160-167.
- Shankar Gowri, Naik Vijaya A, Rajesh Powar, et al. Epidemiology and outcome of burn injuries. *J Indian Acad Forensic Med* 2012;34(4):312-314.
- Akther JM, Nerker NE, Reddy PS, et al. Epidemiology of burned patients admitted in burn unit of a rural, tertiary teaching hospital. *Pravara Med Rev* 2010;2(4):11-16.
- Mir M, Anjum S, Mir R, et al. Etiological and demographic profile of burn injury in Kashmir valley. *The Internet Journal of Plastic Surgery* 2012;8(1):pp 1.
- Ashok K Gupta, Sanjeev Uppal, Ramneesh Garg, et al. A clinico- epidemiological study of 892 patients with burn injuries at a tertiary care hospital in Punjab, India. *J Emerg Trauma Shock* 2011;4(1):7-11.
- Mostafa Hemed, Ashraf Maher, Amr Mabrouk. Epidemiology of burns admitted to ain shams University burns unit, cairo, Egypt. *Burns* 2003;29(4):352-358.
- Ashish K Jaiswal, Himanshu Aggarwal, Pooja Solanki, et al. Epidemiological and socio-cultural study of burn patients in M. Y. hospital, Indore, India. *Indian Journal of Plastic Surgery* 2007;40(2):158-163.
- Lal S, Yadav GK, Rachna Gupta, et al. Mortality pattern of burn patients admitted in S. G. M. hospital rewa: a teaching institute of central India. *Journal of The scientific Society* 2012;39(3):130-135.
- Soltani K, Zand R, Mirghasemi A. Epidemiology and mortality of burns in Tehran, Iran. *Burns* 1998;24(4):325-328.
- Marsh D, Sheik A, Kalil A, et al. Epidemiology of adults hospitalized with burns in Karachi, Pakistan. *Burns* 1996;22(3):225-229.
- Mukerji G, Chamania S, Patidar GP, et al. Epidemiology of paediatric burns in Indore, India. *Burns* 2001;27(1):33-38.