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RECENT TRENDS IN BURN INJURIES IN A TERTIARY CARE HOSPITAL OF WESTERN REGION OF NEPAL

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ABSTRACT
Burn injuries occur on the job, at home, and on the roads as a result of faulty equipment, negligence, and uncontrollable circumstances. The causes of burn injury differ in various communities and understanding this is necessary before preventive action can be planned and implemented**.** This study was taken to identify the epidemiological factors that could help in the future prevention of major burns so that by continuously reviewing the epidemiology of burn injuries, we can effect a reduction in burn incidences. A total of 127 patients were studied during a period from December 2012 to December 2014. Information regarding the demographic profile of burns was obtained and data collected were entered into MS-Excel spread sheets and analysis was carried out. The most productive age group between 21-30 years was involved in burns injuries with female predominance. Flame burns were most common 67(52.75%) of all burns. Majority of females sustained burn injuries during the day time i.e. between (6am- 6 pm) whereas males 18(40.90%) subjects sustained burn injuries between (6 pm and 6 am). Most of the female victims were house wives 34(40.96%) whereas most of the male victims 19 (43.18%) were manual workers. Accidental burns 94.48% outnumbered suicidal and homicidal nature of burns. In our study septicaemic shock 39.37% remained the major cause of burn death.

INTRODUCTION

Thousands of people suffer severe burn injuries each year and hundreds more lose their lives. Burn injuries occur on the job, at home, and on the roads as a result of faulty equipment, negligence, and uncontrollable circumstances. Burn injuries are costly, result in permanent scars as well as lifelong damages [1]. The causes of burn injury differ in various communities and understanding this is necessary before preventive action can be planned and implemented. Only by continuously reviewing the epidemiology of burn injuries, we can effect a reduction in burn incidences [2].

Deaths due to burn injury are only part of the problem, for every person who dies as a result of their burns; many more are left with lifelong disabilities and disfigurements [3]. Manipal Teaching Hospital provides Tertiary Health Care to more than twelve districts in Western Region of Nepal. This study was taken to identify the epidemiological factors that could help in the future prevention of major burns.

MATERIALS AND METHODS

The present study was conducted in Manipal Teaching Hospital; Pokhara, Nepal among the burn patients who were admitted in the burn unit of Manipal Teaching Hospital after institutional ethical committee approved the study. This is a retrospective study conducted to identify the epidemiological factors involved in burns. A total of 127 patients were studied during a period from

December 2012 to December 2014. The subjects in the interest study belong to districts of Kaski, Tanahun, Syangja, Parbat and others. Information regarding the demographic profile of burns was obtained from hospital admission records, case notes, and statement of relatives recorded and also from the police report. The data collected were thoroughly cleaned and entered into MS-Excel spread sheets and analysis was carried out. The procedures involved were transcription, preliminary data inspection, content analysis, and interpretation. Percentages were used in this study to analyze variables. The cases where necessary data required was incomplete such cases were excluded.

RESULTS

In the present study age of the victims was spread over the range of 3 months to 85 years. A total of 72 (56.69%) subjects were from the most productive age group 11-30 years with peak incidence 42 (33.07%) in the age group of 21-30 years (Table 1 & Figure 1).

Female predominance was observed in most of the age group when compared to males. Total subjects of female burn victims were eighty three (65.35%) with male-female ratio being 1:1.3 Majority of the male predominance 17(38.63%) was observed in age group 21-30 years (Table 2).

Maximum victims of burns reported to the casualty were from Kaski district (60.71%) followed by Tanahu district (15.17%) when compared to other districts as shown in Figure 2. Out of 84 subjects, 31 (36.9%) subjects in the age group of 21-30 years sustained burn injuries of < 39% of TBSA. In the other hand 18 (14.17%) subjects sustained burn injuries of > 60% of TBSA and 14 subjects sustained burn injuries of > 80% of TBSA (Table 3).

Table 4 shows female preponderance in burn injuries. Out of 84 female subjects 52 (62.65%) sustained burn injuries of < 39% as compared to 32 (25.19%) males. Incidence of burns <39% of TBSA was observed to be maximum i.e. 66.14% in both sexes.

Flame burns were most common 67(52.75%) of all burns, followed by electricity and lightening each being 17(%), scalds 15(11.81%) and chemical burns 11(8.66%) respectively. Flame burns affected females more than males whereas electrical burn affected more males when compared to females. Scalds and lightening were found to affect both the sexes evenly as shown in Table 5.

A total number of 65 (78.31%) females sustained burn injuries during the day time i.e. between 6:00am - 6:00 pm with a peak incidence between 6:00 am and 12:00 noon. This was in contrast to males where 18 (40.90%) subjects sustained burn injuries between 6:00 pm and 6:00 am with a peak incidence between 6 pm and midnight 15(34.09%) (Table 6).

Most of the victims were house wives 34(40.96%) whereas most of the male victims 19 (43.18%) were manual workers followed by unemployed youths 9 (20.45%) and agricultural workers 8 (18.18%). (Table 7).

In majority of the burn cases 94.48% burns sustained by victims were accidental in nature followed by suicidal (3.14%) and homicidal (2.36%). Females 77 (92.77%) were the majority of the victims to sustain accidental burn injuries compared to females. (Table 8).

Our study septicemic shock 39.37% and neurogenic shock 33.85% remained the major cause of burn death **(**Table 9).

DISCUSSION

The female preponderance is perhaps because in this part of the world cooking still remains the primary responsibility of a housewife which requires the association with the fire sources making them vulnerable to burn injuries. In present study majority of burn cases were reported from Kaski district of Western Region of Nepal. Our hospital is located in the same district and since it is one of the oldest and largest Tertiary Care Hospital in Kaski district it is obvious that it covers large number of cases from this district.

Table 1. Age wise distribution of burn cases

Sex	No of cases	Percentage
Male	44	34.64
Female	83	65.35
Total	127	100

Table 2. Sex wise distribution of burn cases

Age group	Male	Female
0-10	7	12
11-20	11	19
21-30	17	25
31-40	3	9
41-50	2	6
51-60	3	5
61 & above	1	7
Total	44	83

Table 3. Age group and extent of burns

Age group and extent of burns	% 0f burns < 39	% 0f burns 40-49	% 0f burns 50-59	% 0f burns 60-69	% 0f burns 70-79	% 0f burns > 80	Total
0-10	12	2	0	1	0	0	15
11-20	17	6	0	1	0	2	26
21-30	31	5	3	1	0	1	41
31-40	11	2	1	0	0	3	17
41-50	6	1	0	0	0	3	10
51-60	4	2	0	0	0	3	9
61 & above	3	3	0	1	0	2	9
Total	84	21	4	4	0	14	127

Table 4. Sex and Extent of Burns

Extent of burns	Male	Female	Total
< 39	32	52	84
40-49	5	16	21
50-59	1	3	4
60-69	2	3	5
70-79	0	0	0
> 80	4	9	13
Total	44	83	127

Table 5. Causes of burns

Age group (Years)	Flame		Scalds		Electricity		Chemicals		Lightening		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
0-10	13	10	4	3	1	1	1	0	0	0	33
11-20	4	5	2	2	4	2	1	3	2	3	28
21-30	2	7	1	0	4	1	0	1	4	1	21
31-40	2	3	1	0	1	0	1	2	2	2	14
41-50	4	4	0	0	1	0	0	1	1	1	12
51-60	3	3	1	0	0	1	0	1	0	1	10
> 61	3	4	0	1	0	1	0	0	0	0	9
Total	31	36	9	6	11	6	3	8	9	8	127

Table 6. Time of burns

Time of Burns	Male	Female
6.01am-12 noon	16	47
12.01 pm-18 pm	10	18
6 pm – 00	15	13
0.01 am- 6 am	3	5
Total	44	83

Table 7. Occupational distribution of victims of burns

Cause of death	Flame	Scalds	Electricity	Lightening	Chemicals	Total
Neurogenic	14	3	6	17	3	43
Hypovolaemic shock	20	9	0	0	0	29
Septicemia	44	3	3	0	0	50
Bronchopneumonia	3	0	0	0	2	5
Total	81	15	9	17	5	127

Table 8. Manner of infliction of burns

Manner of infliction	Male	Female	Total
Accidental	43	77	120
Suicidal	0	4	4
Homicidal	1	2	3
Total	44	83	127

Table 9. Cause of death in burns

Occupation	Male	Female	Total
Employed	2	10	12
Unemployed	9	15	24
House- wives	0	34	34
Students	6	12	18
Agricultural workers	8	9	17
Manual workers	19	3	22
Total	44	83	127

Figure 1. Showing age wise distribution of burn cases

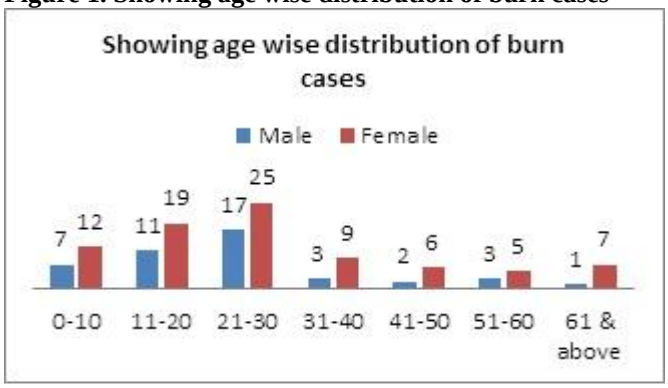
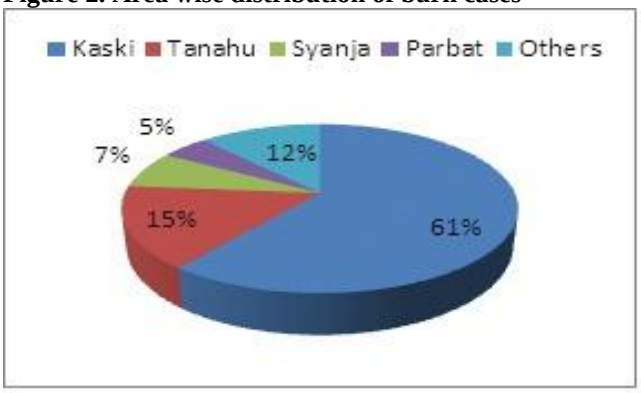


Figure 2. Area wise distribution of burn cases



The age group between 21-30 years constituted 46.86% of < 39% TBSA burn which is in contrary to a study done by [9] where most of the victims of 21-30 years age group sustained 51 to 75% burns. This may be due to the fact that most of the people in this 21-30 years age group are married. It is also the most active period of life where the people struggle for earning their livelihood; and undergoes various stresses in day to day activities and tries to finish their work in a hurry. The increasing stress and hurry activities to complete their task invite frequent accidents.

In the present study it was observed that females were more involved in burns but the extent of burns i.e. < 39% as measured by TBSA was less as compared to males which is in contrary to studies conducted by [10]. This could be attributed to the fact that in this part of the world females do cover almost the whole body with free flowing clothings however these clothes are often cotton clothes unlike synthetic material that catch fire easily and expedite its spread. It was observed in our present study that females sustained burns mostly during the day time, as this is the peak time when meals are cooked and lightening equipments are used by females in their kitchen. Similar results have been found by [10]. In males burn injuries were mainly seen in manual workers who sustained burn injuries in the night hours. They were mostly coming from far places to earn and residing alone in the rooms after exhausting effect of work. Further, single living might have led to excessive drinking habits and lack of discipline. These factors collectively might have precipitated accidents more frequently in them. Our results were similar to the study conducted by Singh et al (1997) [11].

In the present study flame burns accounted for 67% of total burns. The alleged accidental burns contributed to 94.48% of the total burn injuries. This may be due to the fact that females are mostly exposed to flame during the kitchen work making them more susceptible for burn injuries and this finding indicates the caution needed when using equipment causing burns. In our study Septicemia was the major cause of death. This is in accordance to studies conducted by other authors [12,13].

CONCLUSION

Burn injuries can be reduced by bringing about regulations to develop safer cooking appliances, promoting less inflammable fabrics to be worn at home and educating the community especially women on safer first aid practices. The government must appoint more doctors in burn units. The NGOs and social groups must arrange a periodic effort in educating the rural peoples. Step should be taken not only to minimize burn mortality but also to prevent and reduce their incidence at least in cases where human errors and human greed plays a role.

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