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## Pattern of Burn Injuries Admitted to Emergency Department in Suez Canal University Hospital

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### Abstract

*The goal of the study was to determine the different patterns of burn injuries among patients admitted to emergency department in Suez Canal University. Aim: This study aimed at determining the different patterns of burn injuries among patients admitted to emergency department in Suez Canal University. Methods: The study was conducted on 191 patients through a cross sectional study. The data was obtained from the medical records of the patients in a retrospective manner using a designed questionnaire. Results: The age of the patients ranged from one month to eighty years with mean (with mean of age Mean  $\pm$  SD = 8.847  $\pm$  0.98523 years, 58.6% were males and 41.4% were females). The patients of urban areas were more than rural areas. Scald injuries accounted for the majority of burn cases, about (59.2%) while flame injuries about (20.4%), contact with hot object accounted (18.8%) and electrical burn injuries accounted (1.6%). There were (78%) of patients had TBSA of less than 10%, and about (14.7%) of injuries were 10-20%TBSA. About (39.8 %) of patients had suffered from first degree burn, while (16.2 %) of cases had suffered from second degree burn and (30.4%) had suffered from first & second degree burn. About (29.8 %) of patients in this study were hospitalized. The mortality rate in this study was (5.2 %) in hospitalized patients. Conclusions & Recommendations: Flame and scalds appears to be the commonest etiology of burns in our environment. There is a defect about the pre-hospital management needed in such cases which lead finally to deterioration of cases and developing more complications. The study results recommended better Health education on safety and precautions in our communities which should be targeted at the home to protect the vulnerable groups of people from these injuries.*

Keywords: Burn, Scalds, Patterns, Ismailia, Emergency

## 1. INTRODUCTION & RATIONALE

A burn injury is defined as an injury to the skin or other organic tissue caused by thermal trauma. It occurs when some or all of the cells in the skin or other tissues are destroyed by hot liquids (scalds), hot solids (contact burns), or flames (flame burns). Injuries to the skin or other organic tissues due to radiation, radioactivity, electricity, friction or contact with chemicals are also considered as burns. <sup>(1)</sup>

As of 2004, 11 million burns requiring medical care occurred worldwide. <sup>(2)</sup> About 90% of burns occur in the developing world and 70% of these are in children. Survival of injuries greater than 40% total body surface area is rare in the developing world. <sup>(3)</sup>

The majority of burns in children are scalds caused by accidents with kettles, pans, hot drinks and bath water. Among adolescent patients, the burns are usually caused by young males experimenting with matches and flammable liquids. In adults, scalds are not uncommon but are less frequent than flame burns. Most electrical and chemical injuries occur in adults. Cold and radiation are very rare causes of burns. <sup>(4)</sup>

The main aim of this work was to provide information on the different patterns of burn injuries among patients admitted to Emergency department at the Suez Canal University hospital, the most affected risk groups and the different degrees of burn injuries affecting these patients.

## 2. SUBJECTS AND METHODS

### Study Design:

A descriptive cross-sectional survey was conducted to determine the patterns of burn injuries among patients admitted to emergency department in Suez Canal University.

### Setting of the Study:

The study was conducted at Burn unit in the emergency department at Suez Canal University hospital in Ismailia.

### Subjects:

- **Study Population:**

The study population included all the patients admitted to at Suez Canal University hospital in the period from 1/8/2012 to 28/2/2013.

### Sampling

- **Frame:** Burn injured patients presented to emergency department at Suez Canal University hospital.

- **Method:** Non probability convenience sampling method was conducted.
- **Sample Size:** 191 patients.

### Data Collection Tools

The data was obtained from the medical records using a questionnaire which included information about: Socio-demographics, nature of injury, admission and outcome.

### 3. RESULTS

The present study was conducted on 191 of patients who administered to burn unit at Suez Canal University during the period from 1/8/2012 to 28/2/2013. Males had the largest number of patients in the study population (58.6%). Meanwhile, Females were (41.4%). The mean age(x)  $\pm$  standard deviation (SD) was  $8.847 \pm 0.98523$  years. The highest percentage (35.1%) was in the group 5 to 20 years. Most of patients included in this study are not married (i.e. 66%).

It can be noticed the highest percentage of the study group was living in urban areas (65.5%). It can be also easily noticed that most of the study populations are not working (75.9%), then workers (14.1%) and Employees (9.9). This study also revealed that most of burn injuries occur during work days more than the end week holiday

The study shows that scald is the most common cause of burn injury among the study population (59.2%). The Most common cause in all age groups is scald except in the age group from 60 to 80 years flame is the most common cause of burn injury (60%). The study also shows that the most common frequency of TBSA is  $<10\%$  (78%). About (39.8%) of cases involved in this study were suffered from first degree burn, while (30.4%) came with both 1<sup>st</sup> and 2<sup>nd</sup> degree burn

According to hospitalization this study shows that most of cases attended to burn unit in this study weren't hospitalized (70.2%). The hospitalized cases were 57 cases (29.8%). Our study shows that (93.1%) of hospitalized was improved. Only one case (1.7% of hospitalized patients) was referred and (5.2% of hospitalized patients) were died.

### 4. DISCUSSION

In our study, total of 191 acute burn patients were admitted to the Emergency Department in Suez Canal University Hospital. According to gender , the study states almost 58.6% of admitted burn patients were males. The females compromise of 41.4% of the total sample. The 2009 report of the American Burns Association which includes more than 127,000 acute burn admissions from 1999-2008 states that almost 71% of admitted burn patients were males. <sup>(5)</sup>

According to age, our study shows that most (35.1%) of the burn injuries occur in between 5 to 20 years old, while the least (2.6%) was in the group 60 to 80 years. a large south Korean study

reports that 60% of all burn admissions were aged below 15 years and 26% of them were below 5 years<sup>(6)</sup>. This indicates that burn injuries are more common in young age groups..

The distribution of our study population according to their occupation shows that the highest percentage 75.9% was not working, while the lowest 9.9% was employee. In a study was conducted in Iraq by Othman N. et al, 88% of study populations were not working while 12% were employees. This may indicate that most of burn injuries aren't related to occupation.<sup>(7)</sup>

Scald and flame injuries were significantly more common in females while contact burns and other mechanisms were more common in males. Flame burns comprised 64% of all admissions and 86% of admissions in adults aged 15 years and over while scald comprised 30% of all admissions and 84% of admissions in children aged 0-5 years.

In study done by University of Nottingham in Iraq revealed that 75% of burns were scalds, 16% were due to flames, 10% were due to contact with hot objects and 2% were electrical. Many studies report a higher proportion of flame injuries than scalds amongst admitted patients. Amongst children, all studies report that scalds are more common than flame injuries.<sup>(7)</sup>

The distribution of the study population according to degree of burn shows that the highest percentage (39.8%) was 1st degree; while the lowest 2.6% was 3rd degree. 2nd and 3rd degree percentage was 11%. In a study conducted in Malawi by J C Samuel, et al, The average total burn surface area 2nd/3rd degree was 13%.<sup>(8)</sup>

The distribution of our study population according to their hospitalization shows that, the highest percentage (70.2%) wasn't hospitalized, while the lowest percentage (29.8%) was hospitalized. In another study conducted in Iraq by Othman N. et al, 24% of all acute burn patients attending to the centre were hospitalized. This may indicate that the majority of burn injuries don't require hospitalization.<sup>(7)</sup>

The distribution of our study population according to the outcomes shows that 93.1% improved, death in 5.2% and 1.7% were put under referral. The study of Othman N. et al in Iraq shows that the outcome of admission was recovery in 66%, death in 26% and the remaining 8% of participants were either discharged against medical advice before recovery or transferred to other hospitals.<sup>(7)</sup>

## 5. CONCLUSION AND RECOMMENDATIONS

In conclusion, burns remain a serious epidemiological problem with high mortality and morbidity. Flame and scalds appears to be the commonest etiology of burns in our environment. However, there does not appear to have been any appreciable improvement in the management facilities. Consequently, the more severe injuries caused by flame resulted in higher mortality rate.

There is a defect about the pre-hospital management needed in such cases which lead finally to deterioration of cases and developing more complications. There are also several defects in

burn control and safety measures which finally lead to the increased number of this type of injuries such as use of old steam machines in cooking.

Health education on safety and precautions is needed in our communities and should be targeted at the home to protect the vulnerable groups of people from these injuries.

Improvement in the economy, adequate and regular supply of kerosene and petrol will also eliminate hoarding and other dangerous practices which have increased the incidence of flame burns. Establishment of regional burns centers in our country is long overdue.

Concentration of well trained personnel in these centers; adequate funding to eliminate the "compliance factor"; and a more aggressive approach to management, with increasing resort to early surgery will enhance improvement in mortality and morbidity.

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**TABLES**

Table (1): Distribution of gender among burn injured patients admitted to Suez Canal University hospital

	No.	Percent
Male	112	58.6
Female	79	41.4
Total	191	100.0

Table (2) Distribution of the study population according to age

	No.	Percent
0-5	48	25.1
5-20	67	35.1
20-40	60	31.4
40-60	11	5.8
60-80	5	2.6
Total	191	100.0

Table (3): Distribution of burn injured patients admitted to Suez Canal University hospital according to the relation between the age and the cause of burn injuries

		Cause of burn injury				Total
		Flame	Scald	Contact with hot object	Electric	
Age groups by year	1-5	4	34	10	0	48
	5-20	12	41	13	1	67
	20-40	17	29	12	2	60
	40-60	3	7	1	0	11
	60-80	3	2	0	0	5
Total		39	113	36	3	191
Chi-Square Tests						.186 (Irrelevant)

Table (4): Distribution of burn injured patients admitted to Suez Canal University hospital according to their degree of burn injuries

	No.	Percent
1 <sup>st</sup> Degree	76	39.8
2 <sup>nd</sup> Degree	31	16.2
3 <sup>rd</sup> Degree	5	2.6
1 <sup>st</sup> & 2 <sup>nd</sup> Degrees	58	30.4
2 <sup>nd</sup> & 3 <sup>rd</sup> Degrees	21	11.0
Total	191	100.0

**FIGURES**

Figure (1) Distribution of burn injured patients admitted to Suez Canal University hospital according to their hospitalization

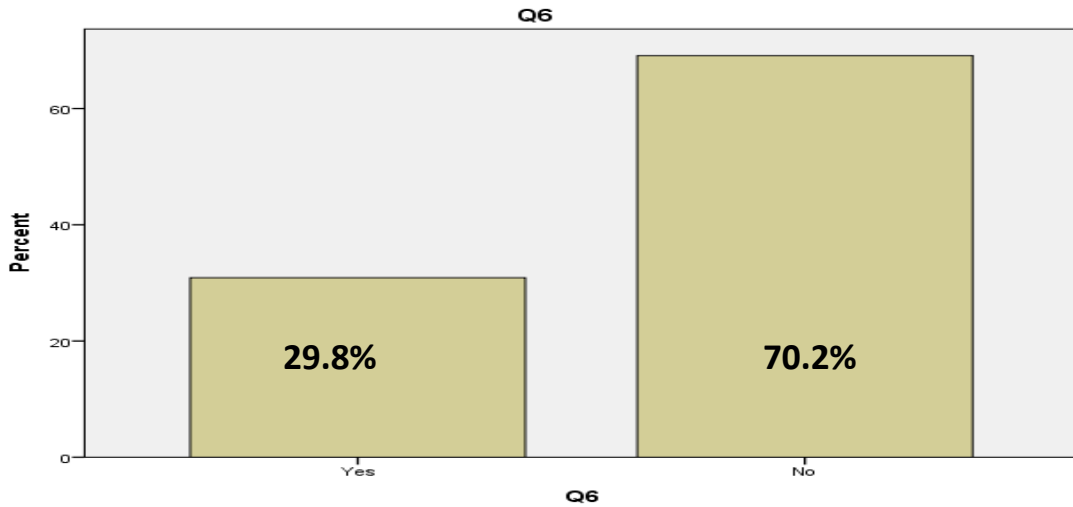


Figure (2) Distribution of burn injured patients admitted to Suez Canal University hospital according to their outcome

