

The prevalence of burn related deaths in Basrah

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ABSTRACT

Background: Burns are injuries to the skin that might be caused by high temperatures, chemicals or different other mechanisms. In Iraq and other developing countries, burns represent an important health problem with many effects on life causing morbidity and mortality, and exert many consequences including disability, psychological impact and financial loss. The aim of this study was to explore the demographics and types of burns, factors associated with burn fatalities, and to evaluate the magnitude of this problem with focusing on causes and manner of thermal deaths among the victims.

Methods: Data were collected retrospectively from autopsies of burn-related deaths reported to Department of Forensic Medicine in Basrah province, southern part of Iraq during a period of 4 years from 1st of January 2013 to 31st of December 2016, along with information retrieved from hospital records, history and information from close relatives.

Results: Out of total of 4244 autopsies conducted during that period, 373 of them were burn-related deaths. The majority of the victims were females (75%). Most of the injuries (89%) were caused by flame. The commonest age group involved in both males and females was (20-29) years. Suicidal burns constituted 62%, and the higher proportion was seen among females. Domestic problems along with psychiatric illnesses were the main factors associated with self-inflicted burns.

Conclusion: Burning deaths represent a large proportion among the overall unnatural deaths in Basrah city, the higher proportion of burn-related deaths was observed in females, and among suicidal burn deaths, females constituted more than ninety percent.

Keywords: Suicide, Burn, Basrah

نسبة انتشار الوفيات المتعلقة بالحروق في محافظة البصرة

المقدمة: الحروق هي اصابات الجلد نتيجة درجات الحرارة العالية او المواد الكيميائية او عن طريق اسباب اخرى وفي العراق والبلدان النامية الاخرى تمثل الحروق مشكله كبيرة على الصحة لما لها من تأثيرات جسدية ونفسية واقتصادية الغرض من هذه الدراسة معرفة مدى انتشار حالات وفيات الحروق والعوامل المؤثرة لتقييم حجم هذه المشكله وللتركيز على اسباب وطبيعة هذه الوفيات

طريقة العمل: تم استعادة المعلومات في هذه الدراسة من حالات التشريح التي اجريت لمتوفين بسبب الحروق في قسم الطب العدلي في محافظة البصرة خلال مدة اربع سنوات من كانون الثاني ٢٠١٣ الى كانون الاول ٢٠١٦ وايضا من خلال المعلومات المتوفرة في الملف الطبي للمتوفين واقوال ذوي الضحايا.

النتائج: اجريت ٤٢٤٤ عملية تشريح خلال فترة الدراسة كان ٣٧٣ منها وفيات بسبب الحروق وكانوا اغلب الضحايا (٧٥%) هم من الاناث واغلب الاصابات (٨٩%) كانت بسبب حروق نارية وكانت الفئة العمرية الاكثر شيوعا هي ٢٠-٢٩ عاما وشكلت الحروق الناتجة عن الانتحار (٦٢%) النسبة الاعلى منها كانت بين الاناث وكانت المشاكل الاسرية والنفسية من اهم الاسباب المتعلقة بالحروق المفتعلة.

الاستنتاج: تشكل الوفيات المتعلقة بالحروق نسبة كبيرة بين الوفيات غير الطبيعية في محافظة البصرة ولوحظت النسبة الاعلى للوفيات المتعلقة بالحروق بين الاناث وايضا شكلت الاناث اكثر من تسعين بالمائة من نسبة حالات الانتحار بواسطة الحرق.

الكلمات المفتاحية: أنتحار، حروق، بصره

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INTRODUCTION

Burn injuries are responsible of a large number of deaths around the world, causing more than 5 million deaths each year.^[1] Thermal injuries may be caused by heat, or a chemical or physical agent having an effect similar to heat. Types of burns include contact burns, flame burns, scalds, radiant heat burns, ionizing radiation burns, chemical burns, electric, lightning burns, and microwave burns.^[2] The size of the area of burning may be more important than the depth on the assessment of the dangers of the burn and many factors influence mortality which may include burn area, increasing age and the presence of inhalation and airway injury.^[3] Burns still represent one of the most leading cause of death in middle and low-income countries,^[4] and have considerable physical, psychological and economic effects on the patients, their families and society.^[5] Traditionally, burns is classified into first, second, third and fourth degree according to the extent of injury. In Iraq, as well as many other countries, individuals may use firearms, poison ingestion, hanging, and different other methods to commit suicide, in this retrospective study, data were extracted from cases of death due to burn during four years period, to review the demographics of burn related deaths with concentration on associated factors and manner of deaths in these fatalities in the province of Basrah.

MATERIAL AND METHODS

This study summarizes the epidemiological characteristics and the prevalence of burn deaths reported to Basrah Forensic Medicine Department which is the sole morgue in Basrah city and receives cases of burn deaths from across the province. In a period of 4 years, from 1st of January 2013 to 31st of December 2016, data were collected retrospectively from autopsy findings obtained from the received cases of burn-related deaths,

together with data retrieve from hospital records, history and information from close relatives or bystanders who attended the incident, there were 373 burn related death cases which were categorized according to age and gender, cause, type and degree of burn, surface area affected (TBSA), associated factors, toxicology report, place of occurrence of incident, duration of survival after the injury, mechanism and manner of death.

RESULTS

Overall, 4244 forensic autopsies were conducted during the 4 years period of the study, of which, 373 were burn related deaths which represent 12% of the total unnatural death autopsies within that period. The higher proportion (75%) of deaths was observed in females, giving an overall female to male ratio of 3:1 (**Table-1**).

Table 1. Distribution of burn related deaths according to age groups and sex.

Age group Years	Males No. (%)	Females No. (%)	Total No.
< 10	11 (57.9)	8 (42.1)	19
10 – 20	17 (18.1)	77 (81.9)	94
21 – 30	21 (19.6)	86 (80.4)	107
31 – 40	18 (19.6)	74 (80.4)	92
41 – 50	13 (34.2)	25 (65.8)	38
51 – 60	5 (41.7)	7 (58.3)	12
> 60	7 (63.6)	4 (36.4)	11
Total	92 (24.7)	281 (75.3)	373

$$\chi^2 = 28.952$$

P- value= 0.081 (not-significant)

In majority of the victims (62%), the incident was classified as self-inflicted burns (**Fig-1**),

and in those 232 victims of self-inflicted burn, females number was almost ten times more than males with a ratio of 9.5:1. Generally, 85% of the burns were caused by flame, while scald injuries constituted 11% (Fig-2), more than two thirds of scald-related deaths were

seen among children less than 5 years old. Most of the incidents took place in the victims own residency (93%), and 3% occurred in work places with the remaining 4% in different outdoor places.

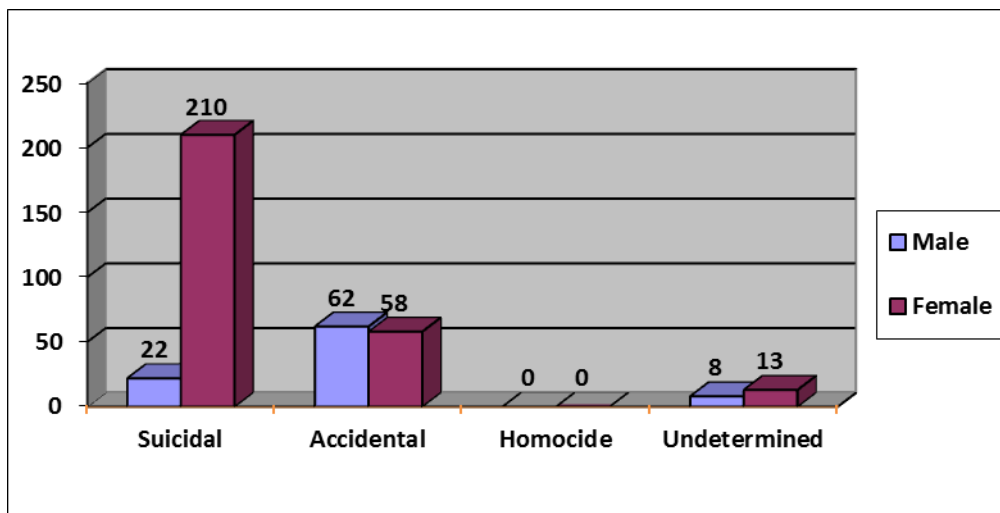


Fig 1. Distribution of cases according to manner of death

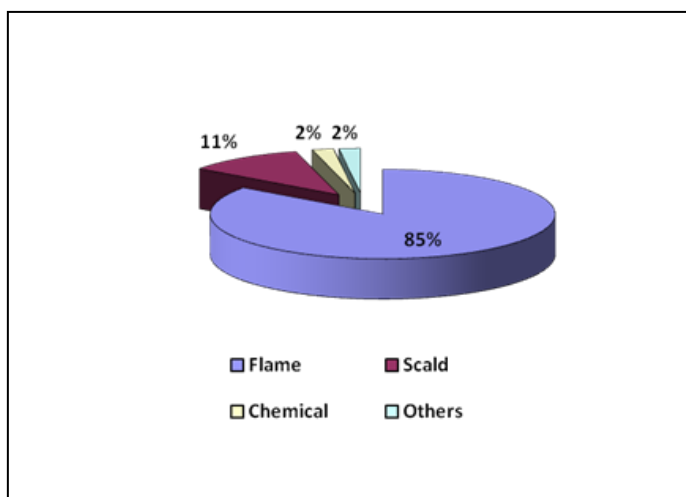


Fig 2. Distribution of cases according to types of burn

Number of victims who sustained over 50% TBSA was 308, and in all cases, victims had second and/or third degree burn. Fifty five

victims were dying within few minutes after the injury, while 246 deaths occurred within one week from the time of injury (Fig-3).

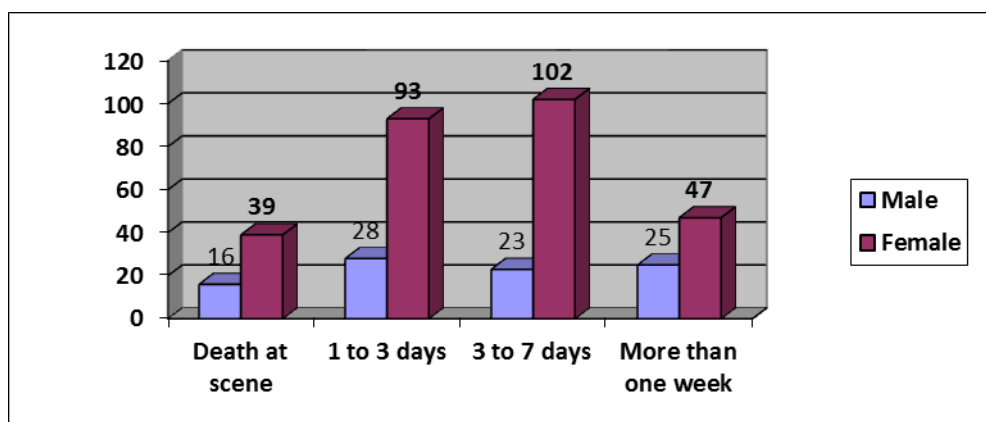


Fig 3. Distribution according to duration of survival of victims after burn injury

Cause of death was septicemia in 36%, followed by neurogenic shock in 32%, pneumonia in 16% and asphyxia 10%, other

causes like stress ulcer, renal failure and hepatitis in 6% (Fig-4).

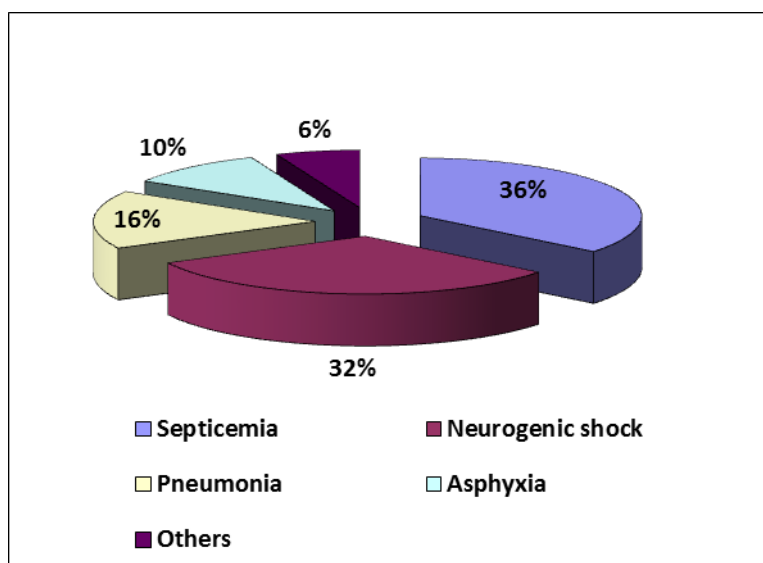


Fig 4. Distribution of cases according to mechanism of death

In 36% of those with suicidal burn, there seems to be no obvious issues or factors that could be blamed for these individuals to commit suicide, however, marital conflicts were seen in 24% of cases, family or domestic problems in 22% and psychiatric disease in 18% (Table-2). Toxicology reports were reviewed and none of the cases have shown positive results.

Table 2. Factors associated with suicidal burns.

	Males No. (%)	Females No. (%)
Marital conflicts	4 (18.2)	53 (25.2)
Domestic problems	6 (27.3)	45 (21.4)
Psychiatric illness	5 (22.7)	36 (17.2)
Undetermined	7 (31.8)	76 (36.2)
Total No.	22 (100%)	210 (100%)

$\chi^2 = 1.171$

P-value = 0.885 (not significant)

DISCUSSION

Burn injury causes major economic and psychological impacts^[6] Worldwide, 95% of burning deaths occur in low and middle-income countries.^[7,8] A large body area involved may be more dangerous to life than a deeper, more localized burn, it is generally considered that 30-50 per cent involvement of the total body surface is incompatible with survival.^[9] Back in the 1990s, an epidemiological study by Fathallah Z. have described a mortality rate of 23.1% among patients admitted for burn injuries in Basrah city,^[10] another Iraqi study in Hilla city showed that number of males who had burn injuries was higher than females among hospitalized patients with overall mortality rate of 17.5%.^[11] Globally, around 4% of burn admissions caused by Self-inflicted injuries.^[12] with the majority occurring in developing countries,^[13] burns also considered as a major public health problem for women in reproductive age^[14] In most burn injuries, the

relatives of the victim may report the incident as accidental, however obtaining a thorough history and detailed investigation, this study have revealed that most of these cases are suicidal in nature. Young females, particularly those between 15 and 40 years old, were found to be more vulnerable to self-inflicted burn deaths than males. A similar study in Kurdistan region of Iraq, have found that married females, especially those with low educational level often commit suicide by burning.^[15] Young females were also found to be the predominant victims of self-inflicted burn injuries in other Middle-eastern countries like, Iran and Egypt^[16,17] however some studies in Iran and India showed that majority of burning incidents are accidental in nature rather than suicidal.^[18] The water scald is a common domestic accident, especially in children and old people,^[19] and in the current study scald deaths was mostly seen among children less than 5 years old, the fact that most accidental scald fatalities seen in children may indicates the carelessness and low precaution level.^[20] Since women in our community and other Middle-Eastern countries mostly deal with home and domestic activities, a large number of burn injuries occurred where women tend to work with fires and stoves, especially for cooking,^[21] flammability of women's clothes and unsafe design of stove and heaters might pose further burden on female burn injuries,^[22] More interest should be focused on factors which motivate individuals for self-immolation or committing suicide in general, together with raising the awareness about the importance of domestic safety measures and minimizing risk factors associated with burn injuries.

In Conclusion, although little is known about burn related deaths and its extent in Basrah, these deaths represent a large proportion among the overall unnatural deaths

in this city, female victims of burn outnumbered males with three times higher sex ratio. In more than sixty percent of the incidents, manner of death was suicidal in nature, and of these, more than ninety percent were females. Generally most of the incidents were caused by flame. Depending on the information retrieved from hospital records, history and information from close relatives revealed that family and psychiatric problems were the main factors associated with self-inflicted burns.

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