

Original Research Article

Epidemiological study of burns registered in Fatemi hospital in Ardabil, 2016

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ABSTRACT

Background: Burns after traffic accidents, falls and interpersonal violence are the fourth most commonly damaged worldwide. Annually more than 11 million people suffered to sever burns that most of them need for interventions and according WHO statistics, yearly more than 300000 people die from fire-related burns and most of them occurred in low income countries. The aim of this study was Epidemiological study of burns registered in Fatemi hospital in Ardabil, 2016.

Methods: This cross-sectional descriptive study has been done on 200 burns registered in burn unit of Fatemi hospital in 2016. Information included age, sex, residence place (urban-rural), marital status, time and area of burn, percent and degree of burn, cause and mechanism of burn, hospitalized time and result of treatment completed by a checklist and analyzed by statistical methods in SPSS version 19.

Results: Of all patients, 118 (59%) were male, 62.5% rural and 50% single. Most of burns occurred in age group less than 10 with 33%. The most common cause of burns was hot liquids with 51.5%. Most of cases had burn in degree 2 (71%) and 53.5% of cases hospitalized five days in hospital. 93.5% of patients improved and discharged.

Conclusions: Results showed that most of burns in this study occurred in age group less than 10 year. So, that it is necessary to prevent these events in future by taking the necessary measures and control and prevention by families.

Keywords: Ardabil, Burn, Epidemiology, Trauma

INTRODUCTION

Burns are one of a kind of injuries that was a threat to death and disability and complications resulting in it decreasing the quality of life and can occur both at work and mainly at home. Burns after traffic accidents, falls and interpersonal violence are the fourth most commonly damaged worldwide. Burn injuries are one of the most severe forms of trauma that causes many disabilities, complications and injuries, along with high hospital costs and emotional problems.¹⁻²

Annually more than 11 million people suffered to sever burns that most of them need for interventions and

according WHO statistics, yearly more than 300000 people die from fire-related burns and most of them occurred in low income countries.³⁻⁴

According to the definition of the International Association of Burn Diseases, burns are an injury to the skin and other organs Which is caused by heat or other severe injuries. Burn occurs when part or all of the skin cells or other tissues of the body are destroyed by hot liquids, hot objects or fire. Damage for skin or other organs caused by radiation, radioactivity, electricity, friction or contact with chemicals, also called burns.⁵ Burns are always considered as one of the most damaging injuries, which not only lead to death and disability, but

also have major psychological and economic consequences, and have long-term adverse health effects.⁶⁻⁷

An effective approach in a geographic area for the prevention of burns requires adequate knowledge of the etiologic patterns of burns in the special geographical area, as well as awareness of socio-economic differences in the burn epidemiology of the area and the awareness of its people.⁸⁻⁹ Burn is one of the most costly injuries that occur in all ages. Burns are among the incidents that accounted for 5 to 12% of the traumas and accidents in the world.¹⁰⁻¹¹

Because of the importance of burns and given the demographic, social, economic and cultural structure in each region, the acquisition of specific information in each region is essential for prevention planning and treatment. Burns from many directions are among the worst tragedies a person may experience and causes death, disability, pain, physical, mental, economic and disability problems. Therefore, for accurate planning and success in preventing illness and reducing its complications, it is necessary to have accurate information on burn epidemiology.¹²

Health-related injuries can have a significant impact on quality of life, including changes in physical, social and mental status of people.¹³ The aim of this study was Epidemiological study of burns registered in Fatemi hospital in Ardabil, 2016.

METHODS

Study design

This cross-sectional descriptive study has been done on 200 burns registered in burn unit of Fatemi hospital in 2016.

Data collection method and statistical analysis

Information included age, sex, residence place (urban-rural), marital status, time and area of burn, percent and degree of burn, cause and mechanism of burn, hospitalized time and result of treatment completed by a checklist from patients hospital records and collected data finally analyzed by descriptive and analytical statistical methods in SPSS version 19. Extent of burn estimated by index” burn percent” as a percent of burned skin area by using schematic symbols represent the front and back surfaces of the human body and we used “burn degree” for evaluation the burn severity in three categories mild to severe (1, 2, 3).

In order to evaluate the burn agent, seven cases were coded and entered in a checklist including fire, flame retardant, hot liquids, crash, explosion, chemical and electric shock. Accordingly, the cause of burn is

evaluated in three groups of thermal, chemical and electrical.

RESULTS

In this study 200 burn patients hospitalized in Fatemi hospital entered the study and of them, 118 (59%) were male and 82 (41%) were female with sex ratio male / female 1.4. Most of cases from urban areas (62.5%) and half of cases were single. The frequency of burn cases in male and urban people significantly more than female and rural people (Table 1).

Table 1: Demographic data of study patients.

Variables	n	%	p-value	
Sex	Male	118	59	0.011
	Female	82	41	
Residence place	Rural	75	37.5	0.001
	Urban	125	62.5	
Marital status	Single	100	50	1
	Marid	100	50	

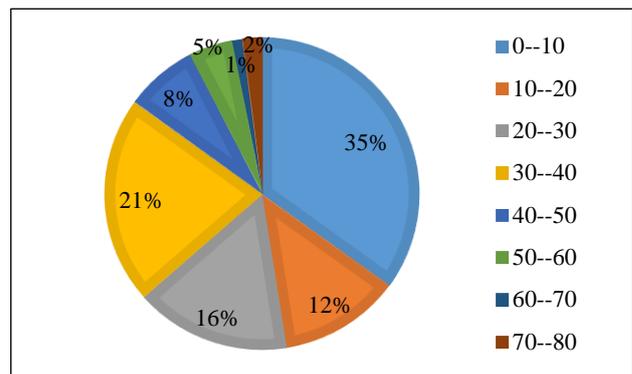


Figure 1: The age distribution of burn cases.

Based on age groups, the most of burn cases were in age group (0-10) with 35% and the least of burn cases were in age group 60-70 with 1%. The frequency of male and female cases was seen in age group 0-10 with 39.8% and 28%, respectively and the relation between age and sex not statistically significant. The most reason and degree for burn in age group 0-10 years was hot liquid and degree 2 each with 78.6% (Figure 1).

According to Table 2, of all patients, most of them burn with hot liquids which were the most burn factor. The main burn factor among men and among women was hot liquid with 41.5% and 65.59%, respectively. The relation between sex and burn factor was statistically significant (p=0.002). The main burn factor among married and single people was fire and hot liquid with 33% and 72%, respectively. The relation between marital status and burn factor was statistically significant (p=0.001). The main burn factor among urban and rural people was hot liquid with 51.2% and 52%, respectively. The relation between

residence place and burn factor was statistically significant (p=0.03).

Table 2: Frequency of burn factors in study patients.

Burn factor	n	%
Fire	44	22
Hot metal	7	3.5
Hot liquids	103	51.5
Accident	2	1
Explosion	21	10.5
chemicals	13	6.5
Electrocution	10	5

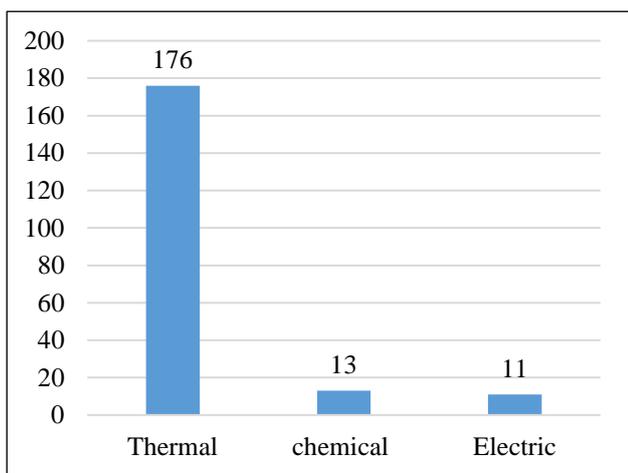


Figure 2: Type of burn cause in study patients.

Based on Figure 2, most of burn cause with 88% was the thermal type. The frequency of thermal type burn among men and women was 81.4% and 97.6%, respectively. The relation between sex and type of burn was statistically significant. But the relation between residence place and marital status and type of burn wasn't statistically significant.

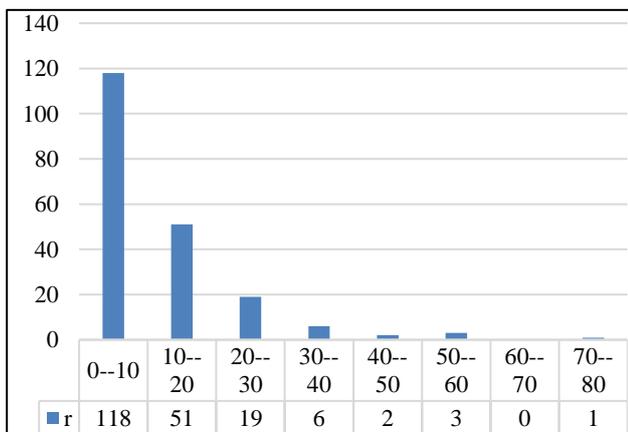


Figure 3: The percentage of burn in study patients.

The highest percentage of burns was seen in range 0-10% (59%) and the least was seen in group 70-80% with 0.5%.

Most of male and female cases were in range 0-10% and the relation between sex and percent of burn no significant. Most of single and married burn cases were in range 0-10% and the relation between marital status and percent of burn no significant. Most of rural and urban cases were in range 0-10% and the relation between residence place and percent of burn no significant (Figure 3).

142 (71%) of cases had burn in degree two. Most of male and female cases were in degree two and the relation between sex and degree of burn wasn't significant. Most of single and married cases were in degree two and the relation between marital status and degree of burn was significant. Most of urban and rural cases were in degree two and the relation between residence place and degree of burn wasn't significant (Figure 4).

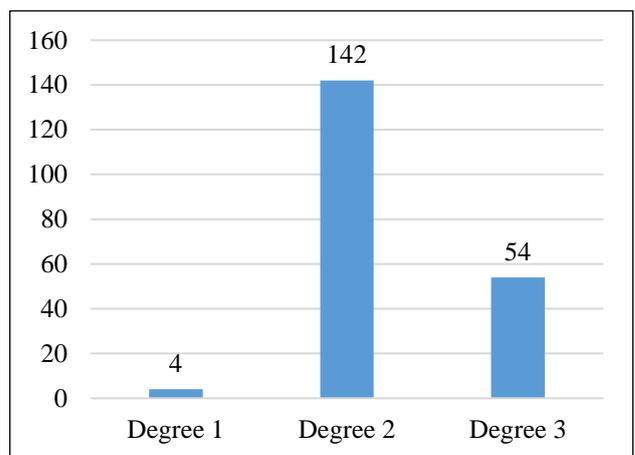


Figure 4: Degree of burn in study patients.

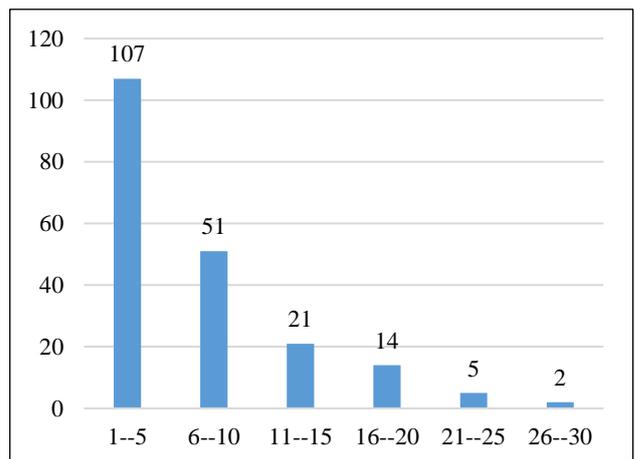


Figure 5: Frequency of hospitalized time in study patients.

Most of patients (53.5%) were hospitalized in hospital and the total time of hospitalization was in range 1 to 30 days. Most of male and female cases were hospitalized 1-5 days and the relation between sex and hospitalization duration wasn't significant. The duration of

hospitalization in burns type thermal was more in group 1-5 days hospitalization and the relation between burn type and hospitalization during was significant. The duration of hospitalization in burn case not significantly related to burn factor (Figure 5).

According to Table 3, of all patients, 93.5% were improved and discharged from hospital. The rate of improvement in male and female burn cases was similar. The rate of improvement in male and female burn cases was similar. The rate of improvement in single and married burn cases was similar. The rate of improvement in rural and urban burn cases was similar. The relation between sex, residence place and marital status with results of treatment wasn't significant. Of all cases, 21% of patients remained for longer than 10 days in hospital.

Table 3: Final result of treatment in study patients.

Result of treatment	n	%
Improvement	187	93.5
Deploying to other centers	12	6
death	1	0.5

DISCUSSION

In this study, the mean age of patients was 22.15 in range 1 to 80 years. The mean age of patients in Afraseyabi study was 20.9, Ansari-Lari study 21.2, Groohi study 21.8, Rastegar study 20.4, Shlash study 2.4, Koushyar and Aghakhani was 22.4 and 23.6 which was in line with our study results.¹⁴⁻²⁰ Results showed that the mean age of patients in all studies in Iran were lower than 25 years. In studies done in near countries, the mean age of patients was in range 1 to 30 years which was in line with our study results.²¹⁻²²

In this study, 59% of patients were occurred in infants less than 10 years but in a study in Birjand one third of burn cases occurred in age less than 9 year and half of cases occurred in age group 10-40 years.²³

The age distribution of this study especially in infants was in median age groups which was similar to other studies done by Afraseyabi, Ansari-lari, Groohi, Rastegar and Shalash and also similar to other study results.^{14-20,23}

A 59% of cases in this study were male and 41% were female that in similar studies the frequency of male was in range 55.6% to 72% in other studies.^{20,23,24} As you can see in these studies the number of male was higher than female and in line with our study results. But in other studies, in other places most of burn cases were female.^{22,25} The difference in sex could be related to method of burn, type of job and demographic differences.

In this study, the rate of burn in urban areas was higher than rural (62.5%) that in line with study done by Koushyar and et al, which can be related to structure of

population in rural and urban areas and differences between causes and mechanism of burn in rural and urban.¹⁹ In a study in Zimbabwe 84% of cases were from rural and also in study in Yassoj, the percent of burn cases in rural people was more than urban people.^{14,26}

The average burn size in this study was 11.85% in range 1-80%. While in infants less than 10 year this size was low than 30% but in similar studies these range from 31% in Afraseyabi study, 40% in Groohi study to more than 40% in Aghakhani study.^{14,16,20}

A 72% of burns are a combination of degree 1 and 2 and the average of the hospitalized time was 6.85 ± 2.5 days (range 1-30) while in Kooshyar study most of cases was in degree 2 and 3 or in a study in Iceland 77% of burn was in degree 2 and in Turkey 48.7% of them in degree 1.^{19,20,24}

In this study, 0.5% of cases has been died which had burn more than 70% and in similar studies the percent of burn was in range 70-90% which wasn't in line with our study results.²⁰

In this study, the most factors for burn was hot liquids (51.5%) which was 41.5% and 65.9% in male and female, respectively that was similar to other studies in Japan, Nigeria, Denmark and Singapore.²⁶⁻²⁸ While in Kooshyar and Aghakhani studies the most factor was Fire and wasn't in line with our study results.¹⁹⁻²⁰

CONCLUSION

Due to the high burn rate in the province, about 30 people per 100,000 people, the findings can be taken into consideration by the authorities to take preventive measures, both in terms of improving the living and working environment and teaching the existing risks and methods Facing these hazards to reduce the physical, psychological and social consequences of these disastrous events as well as possible and Also, by creating emergency units and employing experienced and experienced specialists in burn wards, improving the quality and quantity of emergency and burning departments, and providing appropriate physical equipment and revising the care provided by the implementation of retraining programs for physicians and nurses, the speed and rate Patients recovering from burns will increase. Also, the results of this study showed that most of the burns in this study occurred in the age group less than 10 years, which it is necessary to prevent the occurrence of further events in this field in the future by taking necessary measures and preventing more families in this area and conducting further studies with a wider dimension.

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