

# Burn injury case: Three years evaluation January 2014 - December 2016

King Alexander<sup>\*1</sup> and Sachraswaty R. Laidding\*

\*Department of Surgery, Faculty of Medicine Hasanuddin University, Makassar, Indonesia.

**ABSTRACT Purpose:** Determine the distribution of burn cases in Dr Wahidin Sudirohusodo Makassar from January 2014 to December 2016. **Methods:** A Retrospectively descriptive study. **Results:** Burns sufferers in 2014-2016 were 271 cases, of which in 2014, 2015, 2016 there were 105, 90 and 76 cases respectively, which showed the number of burn cases varies in 3 years. Most sufferers of burns are in the age group of 18-65 years; the most sex is male. Based on the extent, most burns were 20-39%. The mortality rate during the period of 2014-2016 was 56 cases. Most in 2016 as many as 22 (39.5%) cases in men as many as 16 people (72.7%) and women as many as six people (27.3%). High mortality in the area of burns 80-> 90%, and the lowest in the area of burns <10-19%. Survival rate patients with burn size 80-90% in 2014-2016 period were 33,3%, 57,14%, 33,3%. Low mortality rates indicate the success of handling burn cases in Wahidin Sudirohusodo hospitals Makassar. **Conclusions:** Burns sufferers in 2014-2016 were in productive age group, more male than female, most caused by fire, management burn patients in Wahidin Sudirohusodo hospitals Makassar is quite good.

**KEYWORDS** burn, the highest number of cases, gender, age, the mortality rate

## Introduction

Burns is a form of tissue damage or loss caused by contact with heat sources such as fire, hot water, chemicals, electricity, and radiation. In cases of burns, the morbidity and mortality rates are quite high. Burns can cause permanent disability; the treatment requires complex care, long time and also a considerable cost[1,2]. Major burns are more common in men (67%). The highest incidence of burns is mainly found in young adults (20-29 years), followed by children under nine years of age. Individuals over 50 years old at least suffer severe burns (2.3%). Minor burns at less than four years of age are mainly caused by contact with hot surfaces and hot liquids [3].

The main cause of severe burns is a fire (37%) and hot fluids, and hot surfaces are the main causes of severe burns. In children over two years old, fire burns are a major cause of severe burn

injuries (22%) [3,4]. Handling of burns has improved in the last 20 years. Appropriate evaluation and treatment and early referral of specialist burn centres reduce morbidity and mortality with optimal patient outcomes[4].

Patients with burns treated in the hospital who died were found to be 5% due to fire burns. Burns due to hot fluids are the second largest cause of death. In fires in a building, about half of them were fire victims with an area of less than 40%, generally died before arriving at the hospital due to asphyxia or carbon monoxide poisoning[2,4].

## Research Purposes

Our Purpose in this study is to observe the distribution of burn cases in Dr Wahidin Sudirohusodo Makassar from January 2014 to December 2016.

## Methods

This study is retrospectively descriptive. Data were obtained from the medical record of the Dr Hospital burn unit. Wahidin Sudirohusodo Makassar for all patients admitted to the burn unit from 2014-2016. The study was conducted at the Medical Record Section at Dr RSUP Wahidin Sudirohusodo Makassar in January 2014-December 2016.

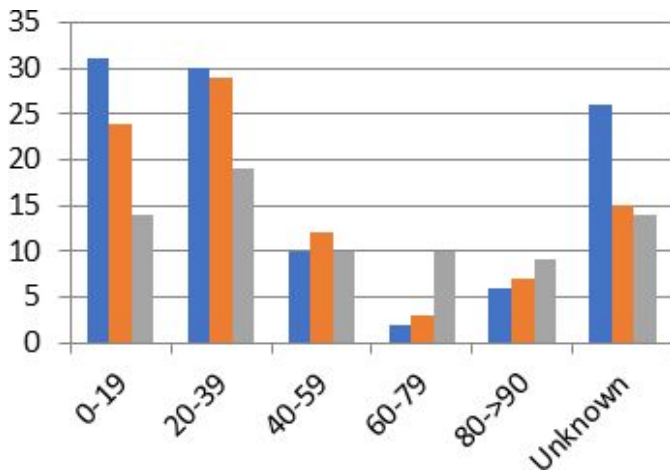
Copyright © 2020 by the International Sci Ink Press Ltd  
DOI:10.5455/IJMRCR.Burn-injury-case  
First Received: May 23, 2019  
Accepted: July 31, 2019  
Associate Editor: Ivan Inkov (BG)

<sup>1</sup>Department of Surgery, Faculty of Medicine Hasanuddin University, Makassar, Indonesia.; Email: kingalexander40040301@gmail.com

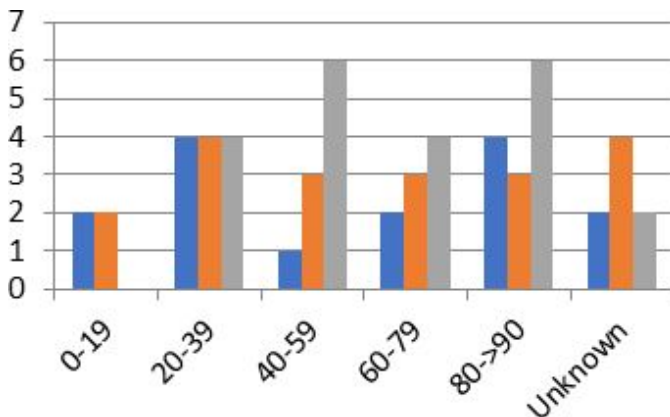
## Results

From this descriptive retrospective study, we obtained data on burn patients treated at Dr Wahidin Sudirohusodo from 2014-2016 as many as 271 patients wherein 2014 the number of patients with burns as 105 patients, in 2015 as 90 cases, in 2016 as 76 cases. This shows the number of burn cases that vary every year in the last three years. Based on gender distribution, the number of male sufferers is higher than a female with a ratio of around 4:1.

Based on the age distribution of burn patients treated at the Dr Hospital burn unit. Wahidin Sudirohusodo Makassar during the 2014-2016 period, the highest number of burns was in the age group of 18-65 years, followed by the age group 6-17 years, the incident was at least at the age of >66 years.



**Figure 1:** 1. Distribution of cases according to the extent of burns.



**Figure 2:** Distribution of cases based on the extent of burns to mortality.

In this study, burn patients were treated at the Dr Hospital burn unit. Wahidin Sudirohusodo Makassar from 2014-2016 was mostly caused by fire burns, followed by high-voltage electric burns. No radiation-induced burn patients were found.

The distribution of burns according to the extent of burns in 2014 had the highest number of patients with burns of 0-19% as many as 31 (29.5%) and at least in the area of burns 60-79% as much as 2 (1.9%), in 2015 the most cases of sufferers with an area of burns of 20-39% as many as 19 (25%) and at least in the area of burns 60-79% as many as 3 (3.33%), in 2016 the most cases

were sufferers with extensive burns 20-39% as many as 19 (25%) and at least in the area of 80-90% burns as many as 9 (11.8%).

**Table 1** Research Results

Gender	2014	2015	2016
<b>Man</b>	92 (87,6%)	69 (76,7%)	56 (73,7%)
<b>Woman</b>	13 (12,4%)	21 (23,3%)	20 (26,3%)
<b>Age</b>			
<b>0-5 Years</b>	11 (11%)	12 (13%)	8 (11%)
<b>6-17 Years</b>	18 (17%)	13 (15%)	18 (24%)
<b>18-65 Years</b>	75 (71%)	63 (70%)	50 (65%)
<b>&gt;65 Years</b>	1 (1%)	2 (2%)	0
<b>Aetiology</b>			
<b>Fire</b>	54(51,4 %)	51 (56,6%)	38 (50%)
<b>Hot Water</b>	21(20 %)	17 (18,8%)	15 (19,7%)
<b>Chemical</b>	4(3,8%)	2 (2,2%)	2 (2,6%)
<b>Electrical</b>	26(24,7%)	21 (27,6%)	21 (27,6%)
<b>Radiation</b>	0	0	0
<b>Extensive Burns</b>			
<b>0-19</b>	31 (29,5%)	24 (26,6%)	14 (18,4%)
<b>20-39</b>	30 (28,5%)	29 (32,2%)	19 (25%)
<b>40-59</b>	10 (9,5%)	12 (13,3%)	10 (13,2%)
<b>60-79</b>	2 (1,9%)	3 (3,33%)	10 (13,2%)
<b>80-90</b>	6 (5,7%)	7 (7,8%)	9 (11,8%)
<b>Unknown</b>	26 (24,8%)	15 (16,7%)	14 (18,4%)
<b>Extensive Burns With Mortality</b>			
<b>0-19</b>	2(13,3%)	2(10,5%)	0
<b>20-39</b>	4(26,7%)	4(21,1%)	4(18,2%)
<b>40-59</b>	1(6,7%)	3(15,8%)	6(27,3%)
<b>60-79</b>	2(13,3%)	3(15,8%)	4(18,2%)
<b>80-90</b>	4(26,7%)	3(15,8%)	6(27,3%)
<b>Unknown</b>	2(13,3%)	4(21,1%)	2(9,1%)

The mortality rate of burns in the hospital burns Dr Wahidin Sudirohusodo Makassar during the 2014-2016 period obtained 56 cases, the most in 2016 A total of 22 (39.5%) cases, as many as 16 people (72.7%) and women as many as six people (27.3%)

Based on the wide distribution of burns to mortality, the highest mortality rate in 2014 was found in patients with a burn area of 20-39% and 80-> 90% 13 (23.21%) cases and the lowest in burns area of 40-59% (6,7), in 2015 the highest cases of mortality were in patients with a burn area of 20-39% 4 (21.1%) cases and the lowest in the area of burns 0-19% in 2 (10.5%) cases, in in 2016 the highest mortality in the area of burns was 0-19% as much as 0 (0%) and the highest in patients with the area of burns 40-59% and 80-> 90% 13 (27.3%) cases. Survival rate of patients

with extensive burns 80-90% 2014-2016 period 33.3%, 57.14%, 33.3%.

## Discussion

In this study, data were obtained from burn patients treated at Dr RSUP Wahidin Sudirohusodo Makassar from 2014-2016 as many as 271 patients wherein 2014 the number of patients suffering from burns was 105 patients, in 2015 as many as 90 cases, in 2016 there were 76 cases.

Based on the sex distribution, the number of male sufferers is greater than that of women with a ratio of around 4:1. This is consistent with Othman's study in 2010, which reported that male sex suffered more burns, although in some countries such as Iran and India there were more female sufferers. This can be influenced by socio-economic factors and cultural culture [5].

Based on the age of most burn cases in the age group of 18-65 years who are of productive age, followed by the age group 6-17 years, the incidence is at least at the age of > 66 years. Othman in 2010 in a review of the article in the Middle East reported that the age distribution was quite varied but evenly the most frequently found in the age group 18-25 years [5]. Ghaffar in 2008 in a 3-year prospective study in India had the highest incidence in the age group of 13-25 years [6].

Based on the aetiology of burns most caused by fire, they are followed by high-voltage electric burns. No radiation-induced burn patients were found. Likewise, with Othman's study in 2008 burns in patients who were treated more due to fire than hot water [5]. Based on the broad distribution of sexes burns from 2014-2016, the average number of burns was higher in men than women for each area of burns. Ghaffar in 2008 also reported on men the most frequent burns in the area of burns 1-25% whereas in the most common women in the area of burns > 75% [6].

Based on the mortality of burn cases, there were 56 cases, most of them in 2016, 22 (39.5%) cases, men as many as 16 people (72.7%) and women as many as six people (27.3%). Burns from the Gatot Soebroto Army Hospital in Jakarta from January 1998 to December 2003 based on age distribution illustrate that cases of children <5 years old occupying the first place in the number of burn cases that occur with the number 24 cases and followed by cases of productive age ie 21- 50 years with 19 cases.

Based on the extent of burns to mortality, the highest mortality rate in 2014 was found in patients with an area of burns of 20-39% and 80-> 90%. Ghaffar 2008, reported a 26% mortality rate in India while Othman 2010 reported an average mortality rate exceeding 20%. In Kuwait, the mortality rate was 5% (with an average area of burns of 10%) and a high mortality rate in Iran (37%) with an average burn area of 38%. The mortality rate is influenced by various factors such as age, the extent of burns, gender and delay in treatment [5,6].

## Conclusion

Based on the results of the data obtained, the age distribution of burn patients who are treated most every year in the age group 18-65 years, the most sex is men. The area of burns in patients who were treated, the most cases were found in the area of burns of 20-39%, where high mortality in the burn area was 80-> 90%, and the lowest was in the area of burns <10-19%. The low mortality rate shows the success of handling burns in Wahidin Sudirohusodo Hospital, Makassar.

## Competing Interests

Burns sufferers in 2014-2016 were 271 cases, low mortality rates indicate the success of handling burn cases in Wahidin Sudirohusodo hospitals Makassar.

## Patient informed consent

Data were obtained from the medical record of the Dr. Hospital burn unit.

## Ethics committee approval

The study was conducted at the Medical Record Section at Dr. RSUP Wahidin Sudirohusodo Makassar in January 2014-December 2016.

## Funding

None.

## References

1. Culiford Alfred, Alexes Hazen. Dermatology for Plastic Surgeon in Grabb and Smiths Plastic Surgeon 6th edition. Lippincott William Wilking;2007. Hal 105-110.
2. Australia and New Zealand Burn Association. Emergency Management of Severe Burns (ESMB) 18th edition 2016.
3. Gregory S, W. Christoper Pederson. Luka Bakar, Buku Ajar bedah Sabiston. EGC: Jakarta; 2005. Hal 151-63.
4. Ahmadsyah Ibrahim. Luka dan penyembuhan Luka. Dalam: Buku Ajar Ilmu Bedah. Edisi Revisi. EGC; 1997. Hal 67-85.
5. Othman Nasih, Kendrik Denise. Epidemiology of Burn Injury in East Mediterania Asia Region. BMC Public Health Journal, 2010.
6. Ghaffar Ussama. Thermal Burn: an epidemiological prospective study. Journal Indian Academic Forensic Medicine. 2008; 30(1): 10-14.
7. Moenadjat Y. Resusitasi: Dasar-dasar management Luka Bakar fase akut. Jakarta: Komite medic asosiasi luka bakar Indonesia; 2008. Hal 5-20, 54-60.