

# Public awareness of first aid treatment in acute burns

Kit Lum Ho<sup>1</sup>, U-Nee Lam<sup>1</sup>, Hidayah HN<sup>1</sup>, Trevor A Fernandez<sup>1</sup>, Dhanya Kuladeva<sup>2</sup>, Nur Shazwani Farah Md Mydin Siddik<sup>2</sup>, Shah Jumaat Mohd Yusof<sup>2</sup>, Salina Ibrahim<sup>1</sup>

<sup>1</sup>Department of Plastic and Reconstructive Surgery Department, Hospital Sungai Buloh, Sungai Buloh Malaysia

<sup>2</sup>Department of Plastic, Reconstructive and Aesthetic Surgery Unit, Faculty of Medicine, Universiti Teknologi MARA, Selangor Malaysia

## ORCID ID of the author(s)

KLH: 0000-0003-4187-4401  
UNL: 0000-0001-6007-5045  
HHN: 0000-0003-0811-2528  
TAF: 0000-0001-7956-8763  
DK: 0000-0001-6791-0269  
NSFMMS: 0000-0003-2770-3278  
SJM: 0000-0003-2979-1494  
SI: 0000-0001-6863-4825

## Corresponding Author

Kit Lum Ho  
47, Jalan Teratai 2/7D, Taman Bukit Teratai,  
56100 Kuala Lumpur, Malaysia  
E-mail: davidhokitlum@gmail.com

## Ethics Committee Approval

Medical Review & Ethics Committee (MREC), Ministry of Health Malaysia. 20 May 2021 date and National Medical Research Register NMRR-21-917-59610 (IIR).

All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

## Conflict of Interest

No conflict of interest was declared by the authors.

## Financial Disclosure

The authors declared that this study has received no financial support.

## Published

2022 March 19

## Copyright © 2022 The Author(s)

### Published by JOSAM

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License 4.0 (CC BY-NC-ND 4.0) where it is permissible to download, share, remix, transform, and build upon the work provided it is properly cited. The work cannot be used commercially without permission from the journal.



## Abstract

**Background/Aim:** Burn injury is a global public health concern. First aid in burns can reduce morbidity and mortality by stopping the burning process and reducing the size and ultimate depth of the burn injury. The aim of this study is to assess the knowledge about first aid for burns in an urban population in Malaysia.

**Methods:** We conducted a cross-sectional study using questionnaires to assess the knowledge about first aid for acute burns in our single tertiary main national referral unit for burn injuries. A total of 100 respondents were interviewed. Respondents were voluntary outpatients in the surgical outpatient department.

**Results:** Twenty-two percent of the respondents complied with World Health Organization (WHO) recommendations. Other methods used were toothpaste (5.6%), soy sauce (4.4%), traditional oils (3.3%), aloe vera gels (2.2%), and a variety of creams (3.3%). Twenty-five percent agreed that the best information in first aid is through a first aid course; 15% chose a phone application, 14% chose a website, and 12% chose a television advertisement. The recommended first aid treatment (running tap water for  $\geq 20$  minutes) has proven beneficial in reducing tissue temperature and severity of injury.

**Conclusion:** In 2019, 91% of the Malaysia population had access to the internet, which offers fast and reliable information on first aid for acute burn injuries. The majority of our population still lacks knowledge about first aid treatment for acute burns. Implementation of education regarding burn first aid should target all populations in Malaysia through different community health campaigns, with collaboration between government and non-governmental agencies.

**Keywords:** Awareness of first aid treatment, Acute burn, Malaysia population, Running tap water

## Introduction

A burn is an injury to the cutaneous or other organic tissue primarily caused by heat or friction, radiation, contact with chemicals, electricity, and radioactivity. According to the World Health Organization (WHO), burns are a global public health risk issue, accounting for an estimated 180,000 deaths each year. The majority of burn deaths take place in low- and middle-income populations, and an estimated two-thirds occur in the South-East Asia regions and Africa. Major burns are a common cause of morbidity, including prolonged stay in hospital, disability, and disfigurement, often with resulting stigma and rejection by the public [1].

In Malaysia, the number of burn cases is increasing in trend [2, 3]. The British Burn Association (2018) recommends cooling an acute burn wound with running tap water for 20 minutes [4]. This will delay the burn progression and improve outcomes in terms of healing and final cosmetic appearance [5]. Several studies on knowledge of first aid in burns from European populations such as London [6] and Australia [7] support these outcomes. However, such studies in the Asian population are limited. No published study on the knowledge of first aid for burns in Malaysia to date can represent the urban population. Thus, this review aimed to assess the awareness of adequate first aid and treatment for burns among the urban population in Malaysia.

## Materials and methods

This is a cross-sectional observational study conducted at a single tertiary main national referral center for burn injuries, the surgical outpatient department in Hospital Sungai Buloh, Selangor, Malaysia, using a previously validated questionnaire (Appendix 1) [8]. Minor alterations of the questionnaire were done to facilitate Malaysian responses. Respondents were recruited by convenience sampling (n=100) from outpatients attending the plastic surgery clinic from January 2019 to March 2019. A non-probability convenience sample was used, and the sample size was estimated using a 95% confidence interval (CI), 5% absolute precision, with 5% expected to practice the recommended first aid technique of holding their burn wound under running cool water—preferably tap water—for more than 20 minutes [3, 9]. Inclusion criteria included non-burn-related outpatients aged between 18 and 65 years old who were able to give informed consent to participate in the study. Respondents who were medical personnel and those who were not Malaysian were excluded.

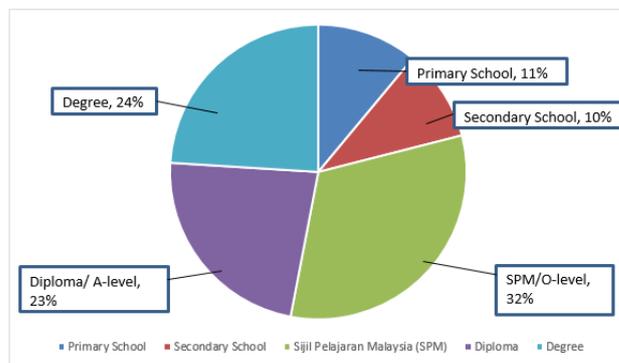
### Statistical analysis

Microsoft Excel 2016 was used to generate data in this study. Simple pie charts were constructed using Microsoft Excel 2016 based on the data we collected from the questionnaire to show the results.

## Results

In this study, 100 respondents were included. Their ages ranged from 15 to 65 years old. Seventy-nine percent had an O-level or its equivalent qualification, and 24% were degree holders (Figure 1). The mean age of the sample was 37.5.

Figure 1: The respondents' education level



From this study, 90% claimed that they had practiced first aid. In general, 73% used running tap water as a first-aid treatment for burns. Only 24% of the respondents reported cooling a burn wound for 20 minutes or more as recommended (Figure 2). Other methods used were applying toothpaste (5.6%), soy sauce (4.4%), traditional oils (3.3%), aloe vera gels (2.2%), and a variety of creams (3.3%) (Figure 3). The majority of respondents do not cover a burn wound (83%) when going to a hospital for treatment. Others indicated using a clean dressing (11%), towels (4%), cling film (1%), and ice packs (1%).

Figure 2: Duration of holding the burn wound under running tap water

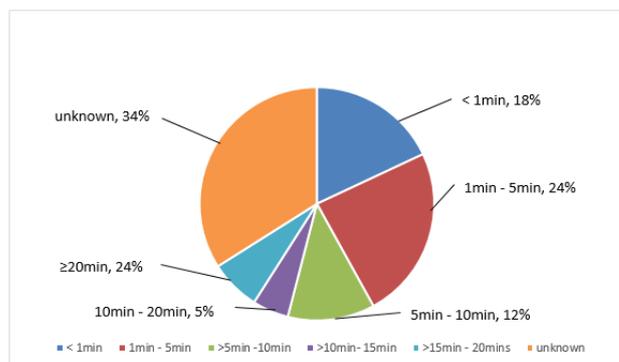
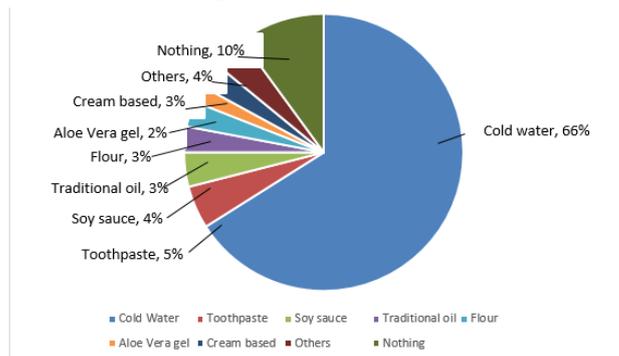
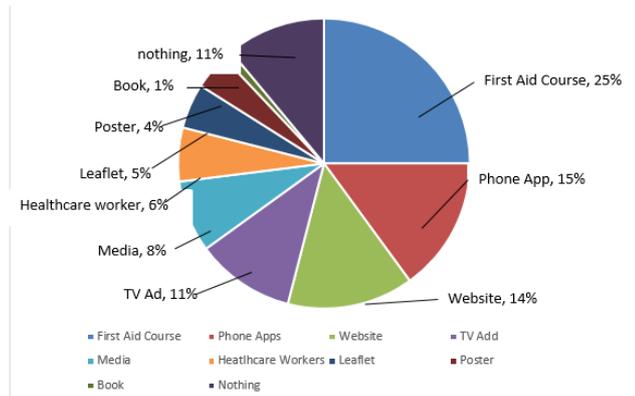


Figure 3: Materials applied during first aid



In the study, most respondents acquired their source of information regarding first aid treatment from family members (45%). Eighty-four percent of respondents were interested in educating themselves on the best method of first aid for burns. Twenty-five percent agreed that the best medium for this information would be a first aid course, followed by 15% choosing a phone application, 14% choosing a website, and 12% opting for a television (TV) advertisement (Figure 4).

Figure 4: Best medium for information



## Discussion

The recommended first aid treatment (running tap water for  $\geq 20$  minutes) has proven beneficial in reducing tissue temperature and severity of injury [10, 11]. It has been found to be significantly associated with improvement in re-epithelialization time and the healing process. Cooling with running tap water can slow the progressive evolution of the burn wound by impeding coagulation and inflammation, reducing swelling and depth of injury, providing pain relief, and cleansing the wound [12]. It also reduces the need for grafting and promotes faster healing [13]. Cooling burn wounds for 20 minutes or more showed superior improvement in the histological analysis of burn depth compared with those treated for 5 and 10 minutes only [14].

However, our public survey showed that our population still has a poor understanding of proper first aid practice, with only 24% of respondents using the correct methods. The rate of proper first aid practices in other high-income countries ranges from 12% to 22% [15]. The recommended first aid practice for burn wounds was followed by 5% of the population of the east coast of Peninsular Malaysia [3]. In two other Third World countries, Saudi Arabia and South Africa, 5.8% and 26% of the population, respectively, practiced the recommended method [16, 17]. Our survey demonstrated a greater percentage of correspondents practicing proper first aid. This could be because the populations involved in the study were from an urban, upper-middle-class area.

A study conducted in New South Wales indicated that people there received information on first aid treatment mainly from a first aid book (42%) and the internet (33%) [7]. In Malaysia, current statistics showed 29 million people using the internet in 2019, with an estimated population penetration of 90% [18]. The public survey we conducted found the majority of participants have internet access, which is the best medium for information for them on burn first aid. This study has the limitation that our population currently is still lacking in knowledge of first aid treatment for burn injuries.

## Conclusion

Advertisements on social media websites can improve public knowledge and awareness. This information can be easily accessible through smart devices. Proper first aid is simple, cheap, and accessible. Implementation of burn first aid education should target all populations in Malaysia through community health campaigns that can be held in shopping malls and at general public gatherings. However, in the light of the recent

COVID-19 pandemic, social distancing is now a new norm. Social media platforms have become the best tool for disseminating information and imparting first aid knowledge about burns to the general public. Therefore, a collaboration between the Ministry of Health, the Minister of Communications, and the Fire and Rescue department holds the key to creating awareness with regards to first aid treatment among fellow Malaysians.

## Acknowledgments

Study support was provided by the Medical Review & Ethics Committee (MREC) secretariat, Ministry of Health, Malaysia, 20 May 2021, and the National Medical Research Register NMRR-21-917-59610 (IIR).

## References

1. Dr Etienne Krug. Burns. World Health Organization; 2018. <http://www.who.int/news-room/fact-sheets/detail/burns>. Accessed 23 September 2020.
2. Somasundaram S, Nasir-Zahari M. A review of burns patients admitted to the Burns Unit of Hospital Universiti Kebangsaan Malaysia. *Med J Malaysia*. 2002;57:418–25.
3. Sul NS, Ahmad SH, Wan Azman WS, Arman ZMS, Siti Fatimah NMJ. The Practice of First Aid for Burn Injuries Among the Population of East Coast of Peninsular Malaysia for 2012–2016. *Journal of Burn Care and Research*. 2020 Jul 3;41(4):905-907.
4. Bartlett N, Yuan J, Holland AJ, Harvey JG, Martin HC, La Hei ER, et al. Optimal duration of cooling for an acute scald contact burn injury in a porcine model. *J Burn Care Res*. 2008; 29:828–34.
5. Leila C, John P, James RM, Roy MK. A Review of First Aid Treatments for burn injuries. *Burns: journal of the International Society for Burn Injuries*. April 2009;35(6):768-75.
6. Cuttle L, Kravchuk O, Wallis B, Kimble RM. An audit of first-aid treatment of pediatric burns patients and their clinical outcome. *J Burn Care Res*. 2009;30:1028–34.
7. Harvey LA, Barr ML, Poulos RG, Finch CF, Sherker S, Harvey JG. A population-based survey of knowledge of first aid for burns in New South Wales. *Med J Aust*. 2011; 195:465–8.
8. M Davies, S Maguire, C Okolie, W Watkins, A M Kemp. How much do parents know about first aid for burns? *Burns*. 2013 Sep;39(6):1083-90.
9. Lemeshow S, Hosmer DW, Klar J, Lwanga SK, Organization WH. Adequacy of sample size in health studies. 1990.
10. Davies JW. Prompt cooling of burned areas: a review of benefits and the effector mechanisms. *Burns Incl Therm Inj*. 1982;9:1–6.
11. Cuttle L, Kempf M, Kravchuk O, Philips GE, Mill J, Wang XQ, et al. The optimal temperature of first aid treatment for partial thickness burn injuries. *Wound Repair Regen*. 2008;16:626–34.
12. Tobalem M, Harder Y, Tschanz E, Speidel V, Pittet-Cuenod B, Wettstein R. First-aid with warm water delays burn progression and increases skin survival. *JPRAS*. 2013;66:260–6
13. Jandera V, Hudson DA, de Wet PM, Innes PM, Rode H. Cooling the burn wound: evaluation of different modalities. *Burns*. 2000; 26: 265–70
14. Cuttle L, Kimber RM. First aid treatment of burn injuries. *Wound Practice and Research*, 2010;18:6-13
15. Adam J, Janet G, Henry CT, Kerry AC. Paediatric First Aid Knowledge Among Parents. *Pediatric emergency care*. 2005;20(12):808-11.
16. Kattan Abdullah E, Alsomer F, Abdulaziz KA, Abdullah A, Albara A. Current knowledge of burn injury first aid practices and applied traditional remedies: a nationwide survey. *Burns & trauma*. 2 Nov 2016;4(37)
17. Scheven D, Barker P, Govindasamy J. Burns in rural Kwa-Zulu Natal: epidemiology and the need for community health education. *Burns*. 2012;38(8):1224–30.
18. Statista Research Department. Internet user penetration Malaysia 2015-2025. 28 July 2020. <https://www.statista.com/statistics/975058/internetpenetration-rate-in-malaysia/>. Accessed 20 Sept 2020.

The National Library of Medicine (NLM) citation style guide has been used in this paper.

Appendix 1

**Questionnaire for First Aid Awareness among the Public**

1. How old are you?  
 <15       16-20       21-25       26-30       31-35       36-40  
 41-45       46-50       51-55       56-60       61-65       >65
- ▷ 2. Gender:  Male       Female
3. Ethnicity  
 Malay       Chinese       Indian       Other.....
4. Are you a parent or grandparent?  
 Parent       Grandparent
5. If so, how many children do you have, and how old are they?  
 .....
6. What is your occupation?  
 .....
7. At what age did you leave school? Did you do any further training?  
 O-level/SPM       A-Level/Diploma       Degree       Further training  
 Please provide details on further training  
 .....
8. Has your child previously had a burn injury?  
 Yes       No       N/A
9. What do you know about first aid for burns?  
 Cold water       Cool water       Ice       Toothpaste  
 Cream       butter       Oil  
 Other.....  
 If water:  Running water       Still  
 For how long:  
 1 minute       5 minutes       10 minutes       15 minutes       20 minutes  
 What would you cover the burn with?  
 Nothing       Cling film       Clean dressing       Other.....
10. Where did you learn/ hear about this first aid?  
 Course       Media       School       Family/friends       Healthcare worker  
 Internet      Others.....
11. How long ago did you learn this?  
 Within last year       In the last 5 years       In the last 10 years  
 >10 years ago
12. Would you be interested in learning more about first aid for burns?  
 Yes       No
13. If yes, how would you like to receive this information?  
 First aid course       TV ad       Leaflet       Phone application  
 Healthcare worker       Website       Poster  
 Other.....
14. Would you find a leaflet like this helpful?  
 Yes       No
15. Any other comments?  
 .....