Original Article

Knowledge and practices related to burn first aid among Majmaah community, Saudi Arabia

Fahad Ali AlQahtani[1], Mohammed Ayed Alanazi[1], Mohammed Khaled Alanazi[1], Khalid Saud Alshalhoub[1], Abdulaziz Ahmed Alfarhood[1], Syed Meraj Ahmed[2]

[1]College of Medicine, Majmaah University, Al Majma'ah, Kingdom of Saudi Arabia, [2]Associate Professor, Department of Community Medicine and Epidemiology, College of Medicine, Majmaah University, Al Majma'ah, Kingdom of Saudi Arabia

Abstract

Background: Burns in developing countries account for significant morbidity and mortality which have been shown by increasing burn first aid awareness. In general, flames, scalds, and contact burns are the most common causes, but in children scalds are the most common. **Objectives:** This study aims to assess the general knowledge and practices related to burn first aid among Majmaah community. **Methods:** This study is a cross-sectional study. Data were collected in 2018 using convenience sampling technique. Saudi men and women age 18 years and older living in Majmaah were included in the study. Data were collected from 390 males and females. The sample size was collected using precision formula. Data were encoded into Microsoft Excel worksheets and imported to Statistical Package for the Social Sciences (SPSS®) software for analysis. **Results:** A total of 390 individuals responded to the survey. Regarding the demographic data of the study participants, 49.2% were between 30 and 49 years old. Most of them were females (71.8%). Regarding burn first aid knowledge, 82.6% of the study participants knew that the first thing is to stop, drop, and roll when your clothes catch fire, 43.8% knew to apply cold water if hot oil spills on the hands, 41.0% knew that all burn injuries must be treated at hospital, whereas most of them 78.5% knew never to apply raw eggs or herbs to burn wounds. **Conclusion:** The knowledge of Majmaah community toward first aid is found to be low in spite of most of the respondents having a positive attitude toward first aid. The majority of the study participants (73.8%) were well-educated and had a bachelor's degree.

Keywords: Burn, first aid, knowledge, practices

Introduction

An estimated number of 180,000 deaths are caused by burns every year – the majority occur in low- and middle-income countries.[1] In general, flames, scalds, and contact burns are the most common causes, but in children scalds are the most common.[2] In many high-income countries, burn death rates have been decreasing, and the rate of child deaths from burns is currently more than seven times higher in low- and middle-income countries than in high-income countries.[1]

Address for correspondence: Dr. Fahad Ali AlQahtani, 6999 AlHanayah, Tuwaiq, Riyadh 14923 4118, Kingdom of Saudi Arabia.
E-mail: alqahtani39@gmail.com

Access this article online

Quick Response Code:

Website: www.jfmpc.com

DOI: 10.4103/jfmpc.jfmpc_382_18

A research done by Burton *et al.* demonstrated the incidence of burns in the Calgary Health Region in 1996 (12.2 burn injury admissions per 100,000 population) and 2004 (12.3 admissions per 100,000 population); the majority of the patients were admitted with second-degree burns, and burns of the head and neck were the most prevalent.[3] Fadeyibi *et al.* reported that water lavage was used in 29.2% of cases, raw eggs in 12.5%, and other materials in 48.8%. About 23.8% of the patients had not received any form of first aid at presentation. Patients who received no water first aid had higher complication rate (35.3% vs. 18.4%) compared with those who received water first aid.[4] Othman and Kendrick reported that the incidence of burns ranged from 112 to 518 per 100,000 per year. Burn victims were more

How to cite this article: AlQahtani FA, Alanazi MA, Alanazi MK, Alshalhoub KS, Alfarhood AA, Ahmed SM. Knowledge and practices related to burn first aid among Majmaah community, Saudi Arabia. J Family Med Prim Care 2019;8:594-8.

frequently young, and approximately one-third of the victims were children between 0 and 5 years of age. Hospital mortality ranged from 5% to 37%, but was commonly above 20%.[5]

Many studies have reported the epidemiology of burns in Saudi Arabia, with scald, flame, and electrical burns being the most common causes. Males dominated in most of the studies, and the most common age group affected are children.[6-8]

Regarding first aid of stopping the burns, some factors affect the outcome of burns, such as the application of running cold tap water for 20 min, removing clothing and jewelry, and covering the wound with a sterile dressing.[9,10] In general, the 15°C and 2°C in treatment of the wound had better outcomes in terms of reepithelialization, scar histology, and scar appearance. Ice should not be used.[9] Low level of knowledge of first aid in burns was shown in previous studies, and hence in this study, we aim to assess the general knowledge and practices related to burn first aid among Majmaah community.

Research Problem and Motivation

The search for previous studies related to burn first aid was almost nonexistent in Saudi Arabia. Very few articles have been published related to burn first aid. Burn is one of the most common reasons for presentation to the emergency department and it leads to substantial healthcare costs. For that, our study aims to assess the general knowledge and practices related to burn first aid among Majmaah community, Saudi Arabia.

General Objective

The objective of the study is to assess the general knowledge and practices related to burn first aid among Majmaah community.

Specific objectives

- To assess the knowledge of applying first aid to burn victims among the participants
- To determine the attitude of the participants toward practicing the application of first aid on burn victims.

Methodology

Study design: Descriptive, cross-sectional study, to assess the general knowledge and practices related to burn first aid among Majmaah community.

Study area: Majmaah city is a middle town. It is 180 km far away from the capital city of Kingdom of Saudi Arabia (Riyadh). It has a population of 60,000 people.

The study was conducted at public places in Majmaah city. Data were collected from May 2018 to August 2018 using convenience sampling technique.

Saudi men and women age 18 years and older living in Majmaah were included in the study. Data were collected from 390 males and females. The sample size was collected using precision formula. Data were collected by investigators themselves (directly interacting with the participants) using a structured precoded and pretested questionnaire. The questionnaire was translated into Arabic language.

Data were encoded into Microsoft Excel worksheets and imported to Statistical Package for the Social Sciences (SPSS®) software for analysis. Descriptive data were expressed as percentages. Correlations between variables were performed using Pearson's correlation coefficient. Significance of correlations was tested using Chi-square test for categorical variables. P value < 0.05 is considered statistically significant.

Informed consent from the participants was obtained; they were also briefed about the advantages to them and to the community due to their participation. All information was kept purely confidential and was used only for statistical analysis. Ethical clearance was obtained from the ethical committee of Majmaah University (approval no. MUREC-MAY.13/COM-2018/17).

Results

Demographic data

A total of 390 individuals responded to the survey [Table 1]. Regarding the demographic data of the study participants, 49.2% were between 30 and 49 years old. Most of them were females (71.8%). The majority of the study participants (73.8%) were well-educated and had a bachelor's degree. Most of the sample population (65.4%) had a monthly income of less than 10,000 Saudi Riyals.

The majority of the study participants [324 (83.1%)] were living at home with a family member less than 18 years old. Among the 390 participants, 285 (73.1%) experienced a burn injury to themselves or a close family member. Previous background knowledge on burn first aid was present in 223 participants (57.2%).

Burn first aid implementation

Regarding burn first aid knowledge, 82.6% of study participants knew that the first thing is to stop, drop, and roll when your clothes catch fire, 43.8% knew to apply cold water if hot oil spills on the hands, 41.0% knew that all burn injuries must be treated at hospital, whereas most of them 78.5% knew never to apply raw eggs or herbs to burn wounds [Table 2].

Following the burn injury, 325 (83.3%) removed clothing and accessories from the area of injury, and 239 (61.3%) wrapped the area with a clean cloth [Table 3]. Water was applied by 213 (54.6%). Among those who applied water, 53 (25.1%) applied water for less than 5 min, 97 (46.0%) for 5–10 min, 40 (19.0%) for 10–15 min, and 21 (10%) for more than 15 min. Almost all the study participants [384 (98.5%)] sought medical assistance.

Table 1: Demographic data of study participants

Items	*n* (390)	Percentage
Age (years)		
18-29	155	39.7
30-49	192	49.2
>50	43	11.0
Gender		
Male	110	28.2
Female	280	71.8
Level of education		
Primary	8	2.1
Middle	18	4.6
High school	76	19.5
University	288	73.8
Employment		
Unemployed	148	37.9
Student	99	25.4
Teacher	56	14.4
Office	69	17.7
Healthcare provider	18	4.6
Monthly income		
<10,000	255	65.4
10,000-20,000	116	29.7
21,000-30,000	9	2.3
>30,000	10	2.6
With children/adolescents/teenagers (under 18 years) living at home		
Yes	324	83.1
No	66	16.9
Prior knowledge of applying first aid to burn victims		
Yes	223	57.2
No	167	42.8
History of exposure to burn injury (self or family member)		
Yes	285	73.1
No	105	26.9

Table 2: Burn first aid knowledge

Questions and answers	*n* (390)	Percentage
Stop, drop, and roll when your clothes catch fire		
Yes	322	82.6
No	68	17.4
Apply cold water if hot oil spills on the hands		
Yes	171	43.8
No	219	56.2
All burn injuries must be treated in the hospital		
Yes	160	41.0
No	230	59.0
Never apply raw egg or herbs to burn wounds		
Yes	306	78.5
No	84	21.5

Discussion

Initial management of burn injury is paramount for the survival of burned victims. It takes time, ranging from hours to days, to transfer patients to definitive care facilities. Proper first aid and initial treatment can significantly reduce the severity and improve the survival of burn injury.[11-13] Community awareness of first aid for burn injuries in the general population and especially workers in high-risk groups, in particular, have a significant role to ensure self-rescue and help each other to reduce the severity and mortality in case of an accident especially in mass casualty incidences.[14] According to worldwide reports, community first aid knowledge for burns is rather limited, especially in developing and underdeveloped countries.[12,13,15]

In New South Wales, Harvey *et al.* surveyed 7320 individuals through a telephone-based survey with 82% of respondents expressing that they would cool a burn with water; however, only 9.4% would do so for an optimal 20 min; other first aid measures were implemented in less than 1%.[16] In New York, Taira *et al.* studied 211 burn victims on their prehospital actions; the study showed that 73% cooled their burns, tap water was used by 39.9%, ice by 25.2%, and a cooling blanket by 8.9%, and dressings were applied by 22.2% only.[17] In Australia, Cuttle *et al.* studied retrospectively 459 burn victims, with 80.2% applying cold water but yet again only 12.1% did so for 20 min or more.[18] In Milas, Turkey, 39.6% applied cold water alone to burn injuries.[19] In Kwa-Zulu Natal, 26% applied water and only 1% applied water for 10 min.[20] Wallace *et al.* conducted a survey of 2602 adults at a sports club about first aid for burns. The report indicated that only 30%–50% (variable up to burn agents) participants had efficient knowledge. Correct answer rate was 15% higher in groups who had been trained about first aid in the past 5 years (about 50% of participants).[21] Bazargani *et al.* investigated people with burn injuries and found that most of them attempted to go to the hospital as soon as possible. Patients thought that use of cold water would cause further harm to the burn wound. In addition, patients also believed in home remedies to reduce pain and infection, and thought it would result in better wound healing and better scar appearance. Few of them knew the methods to extinguish a fire and how to escape from a fire.[22] Hsiao *et al.* conducted a survey among students in Cambodia. It showed that 36% of the participants had information about first aid for burns, 13% answered to use water to cool the burn surface, and 7% knew how to stop the fire by rolling on the ground. However, many students indicated that they would use toothpaste (18%), immediately dress the burn wounds without cooling, or just call for help and do nothing for burn wounds.[23] Evaluating knowledge of family members at the English hospitals, Davies *et al.* indicated that only 32% had sufficient knowledge of first aid for burns; socioeconomical class, income, and age had no significant relationship with the results of the survey.[24] Graham *et al.* investigated knowledge of parents in Southern of Yorkshire, Britain, and indicated that 73% of mothers would use cooling methods onto the burn wound and 92% parents would cover burn wound by appropriate materials. Less than 40% parents would remove clothing and jewelry and 35% of them applied water for sufficient time.[25] There were similar surveys conducted locally in Vietnam. Quynh *et al.* surveyed 200 habitants in the community and showed that 40.5% of participants had sufficient first aid knowledge on thermal injury, 38.7% would use cool fresh water, 15% would temporarily cover the burn wound, and 80.5% would keep the

Table 3: Burn first aid practice

Questions and answers	*n* (390)	Percentage
Remove clothing or accessories		
Yes	325	83.3
No	65	16.7
Seek primary medical assistance		
Yes	384	98.5
No	6	1.5
Wrap injury with clean piece of cloth		
Yes	239	61.3
No	151	38.7
Apply water to injured area		
Yes	213	54.6
No	177	45.4
Applying water duration		
Less than 5 min	53	25.1
5-10 min	97	46.0
10-15 min	40	19.0
More than 15 min	21	10.0

blister intact. Most information came from family members/friends or relatives (46%) followed by media (36%).[26]

A similar study conducted in Saudi Arabia by Kattan *et al.* reported that 1550 respondents had a history of burn exposure in which burn injury first aid was applied as follows: 1118 (72.1%) removed clothing and accessories from the injured area; water was applied by 990 (63.9%); among those who applied water, 877 (88.6%) applied cold water; and only 57 (5.8%) did so for more than 15 min. Wrapping the burn area was performed by 526 (33.9%), and 985 (63.5%) sought medical assistance. When it comes to traditional remedies, 2134 (77.4%) knew of and/or implemented these remedies as first aid or to treat burns. Honey and toothpaste were the most common among these remedies with 1491 (69.9%) and 1147 (53.7%), respectively.[15]

In our study, regarding burn first aid knowledge, more than three-quarters (82.6%) of study participants knew that the first thing is to stop, drop, and roll when your clothes catch fire, 43.8% knew to apply cold water if hot oil spills on the hands, 41.0% knew that all burn injuries must be treated at hospital, whereas most of them 78.5% knew never to apply raw eggs or herbs to burn wounds. More than three-quarters of our respondents (83.3%) removed clothing and accessories from the area of injury, and about two-thirds (61.3%) wrapped the area with a clean cloth. Approximately half (54.6%) applied water to the injured area. Among those who applied water, most respondents (46%) applied water for 5–10 min and almost all the study participants (98.5%) sought medical assistance.

Education level represents an important factor for proper adoption of first aid practice. The majority of the study participants (73.8%) were well-educated and had a bachelor degree [as detailed in Table 1]. These results matched with Kattan *et al.* who reported that the majority of their respondents were university graduates, of which 51.1% had a bachelor's degree.[15]

Conclusion

The knowledge of Majmaah community toward first aid is found to be low in spite of most of the respondents having a positive attitude toward first aid. The majority of the study participants (73.8%) were well-educated and had a bachelor degree. The traditional home remedy practice was also high, which further worsens the current status. The results of this study should be taken into serious consideration by the different healthcare agencies responsible to shed light on deficiencies and to start widespread community incentives.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. World Health Organization. (January 2018) Media centre, fact sheet, burns. Available from: from http://www.who.int/mediacentre/factsheets/fs365/en/. [Last accessed on 2018 Apr 08].
2. Brusselaers N, Monstrey S, Vogelaers D, Hoste E, Blot S. Severe burn injury in Europe: A systematic review of the incidence, etiology, morbidity, and mortality. Crit Care 2010;14:R188.
3. Burton KR, Sharma VK, Harrop R, Lindsay R. A population-based study of the epidemiology of acute adult burn injuries in the Calgary Health Region and factors associated with mortality and hospital length of stay from 1995 to 2004. Burns 2009;35:572-9.
4. Fadeyibi IO, Ibrahim NA, Mustafa IA, Ugburo AO, Adejumo AO, Buari B. Practice of first aid in burn related injuries in a developing country. Burns 2015;41:1322-32.
5. Othman N, Kendrick D. Epidemiology of burn injuries in the East Mediterranean Region: A systematic review. BMC Pub Health 2010;10:83.
6. Al-Hoqail RA, Fadaak H, Wafa AW. Burn injuries at a university hospital in Saudi Arabia: An audit and concept of total quality management, 1997-2003. J Craniofac Surg 2011;22:404-8.
7. Al-Shehri M. The pattern of paediatric burn injuries in Southwestern, Saudi Arabia. West Afr J Med 2004;23:294-9.
8. Jamal YS, Ardawi MS, Ashy AA, Merdad H, Shaik SA. Burn injuries in the Jeddah area of Saudi Arabia: A study of 319 cases. Burns 1989;15:295-8.
9. Cuttle L, Pearn J, McMillan JR, Kimble RM. A review of first aid treatments for burn injuries. Burns 2009;35:768-75.
10. Hudspith J, Rayatt S. First aid and treatment of minor burns. BMJ 2004;328:1487-9.
11. Mlcak RP, Buffalo C, Jimenerz CJ. Pre-hospital management, transportation and emergency care. In: Herndon David N, editor. Total Burn Care. Elsevier; 2012. p. 93-102.
12. Nguyen NL, Gun R, Ryal P. The importance of immediate cooling – A case series of childhood burns in Vietnam. Burns 2002;28:173-6.
13. Lam NN, Dung NT. First aid and initial management for

childhood burns in Vietnam – An appeal for public and continuing medical education. Burns 2008;34:67-70.

14. Quinn L, Challen K, Walter D. Medical and prehospital care training in UK fire and rescue services. Emerg Med J 2009;26:601-3.
15. Kattan AE, AlShomer F, Alhujayri AK, Addar A, Aljerian A. Current knowledge of burn injury first aid practices and applied traditional remedies: A nationwide survey. Burns Trauma 2016;2:37.
16. 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.
17. Taira BR, Singer AJ, Cassara G, Salama MN, Sandoval S. Rates of compliance with first aid recommendations in burn patients. J Burn Care Res 2010;31:121-4.
18. Fried M, Kahanovitz S, Dagan R. Full-thickness foot burn of a pilgrim to Mecca. Burns 1996;22:644-5.
19. Karaoz B. First-aid home treatment of burns among children and some implications at Milas, Turkey. J Emerg Nurs 2010;36:111-4.
20. Scheven D, Barker P, Govindasamy J. Burns in rural Kwa-Zulu Natal: Epidemiology and the need for community health education. Burns 2012;38:1224-30.
21. Wallace HJ, O'Neill TB, Wood FM. Determinants of first aid knowledge: Crosssectional study. Burns 2013;39:1162-9.
22. Sadeghi Bazargani H, Fouladi N, Alimohammadi H, Sadeghieh Ahari S, Agamohammadi M, Mohamadi R. Prehospital treatment of burns: A qualitative study of experiences, perception and reaction of victims. Burns 2013;39:860-5.
23. Hsiao M, Tsai B, Uk P, Jo H, Gomez M, Gollogly JG, *et al.* What do kids know: A survey of 420 Grade 5 students in Cambodia on their knowledge of burn prevention and first-aid treatment. Burns 2007;33:347-51.
24. Davies M, Maguire S, Okolie C, Watkins W, Kemp AM. How much do parents know about first aid for burns. Burns 2013;39:1083-90.
25. Graham HE, Bache SE, Muthayya P, Baker J, Ralston DR. Are parents in the UK equipped to provide adequate burns first aid? Burns 2012;38:438-43.
26. Quynh NTT, Hong TT, Hien HT, Hanh TTM. Current situation of first aids and treatment of work related injuries at agricultural areas in Vietnam. J Pract Med 2013;866:56-9.