



# **Population Awareness and Attitude towards First Aid in Burn in Makkah Al-Mukarramah, Saudi Arabia – A Cross Sectional Study**

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## **Author's contribution**

*The sole author designed, analyzed, interpreted and prepared the manuscript.*

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## **ABSTRACT**

**Background:** Worldwide, an estimated 180, 000 deaths per year are caused by burns. Majority occur in low- and middle-income countries. Inadequate awareness of burn first aid has been reported in both developed and developing countries. In Saudi Arabia, studies reported inadequate level of knowledge of general population of first aid in burns emergencies including communities of Al-Madinah Munawwarah, Jeddah, Riyadh, Majmaah and Hail.

**Objective:** we aim to assess the general knowledge and attitude regarding burn first aid among Makkah Al-Mukarramah population. Thus, the results of this study could help to understand the need for community to more implantation of Health Awareness Campaigns to help burn injuries managements.

**Methods:** A cross-sectional study was performed using an online survey. A total of 1390 participants completed the questionnaire from 15 February to 15 March 2019.

**Results:** Around 51.4% believed that washing burned area with cold water is the immediate first aid for 1<sup>st</sup> degree burns, 38.3% and 61.7% believed that going to the nearest emergency department is immediate first aid in 2<sup>nd</sup> and 3<sup>rd</sup> degree burns, respectively. Around 46.7% agreed to remove clothes stuck to the burned skin in case of burns, 34.5% applied traditional home remedy including toothpaste, honey, tomato paste or egg.

**Conclusion:** we found that population of western region have fair knowledge and attitude towards first aid in burns. However, traditional home remedy practice still present. Health Awareness Campaigns are needed to improve community attitude towards burn injuries managements furthermore.

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**Keywords:** Burn; first aid; Makkah; Saudi Arabia; public awareness.

## 1. INTRODUCTION

Worldwide, an estimated 180,000 deaths per year are caused by burns. Majority occur in low- and middle-income countries. Non-fatal burns are a leading cause of morbidity, including prolonged hospitalization, disfigurement and disability [1]. In Saudi Arabia, approximately 0.3% of the Saudi population was reported to be affected by burns [2-4]. Burns injury can be caused by heat from electrical heating appliances, electricity, flame, friction, hot air and hot gases, hot objects, chemicals, radiation [5].

In burn emergency situations, application of running cold water for at least 20 minutes should be the immediate action as it improves outcome in terms of healing [6,7]. Using traditional remedies, eggs, toothpaste and other are very common misconception [8]. Inadequate awareness of burn first aid has been reported in both developed and developing countries [6,8,9].

In Saudi Arabia, studies reported inadequate level of knowledge of general population of first aid in burns emergencies including communities of Al-Madinah Al-Munawara, Jeddah, Riyadh, Majmaah and Hail [10-14]. Among Medical Students, King Khalid University in Abha and Princess Norah University in Riyadh, studies showed poor knowledge about first aid among the medical students [15-17]. Even among health care providers, studied reported limited knowledge of burn first aid with several using of traditional remedies [18,19]. Training can help in burn management as trained students in Secondary School in Taif showed better deal with emergency situations compared to untrained students [20].

In our study, we aim to assess the general knowledge and attitude regarding burn first aid among Makkah Al-Mukarramah population. Thus, the results of this study could help to understand the need of community to more implantation of Health Awareness Campaigns to help burn injuries managements.

## 2. METHODOLOGY

### 2.1 Study Design

This is a cross-sectional study with a total of 1390 participants who completed the questionnaire from December 15, 2020 to

February 15, 2021 within Makkah Al-Mukarramah, Saudi Arabia.

### 2.2 Data Collection

The online survey was anonymous, prepared in Arabic- language format. Consent of participants was considered by their submission. The questionnaire had four sections; demographic characteristics and risk factors of osteoporosis, daily food intake habits of participant in relation to bone health, participant attitude towards disease management and involvement of physicians and pharmacist in patient education. Sample size was used using an online calculator to detect the power of statistics.

### 2.3 Statistical Analysis

All the variables were analyzed using SPSS Var 23.0 software 2015. Descriptive analyses such as percentages and graphs were used to describe the findings of this study.

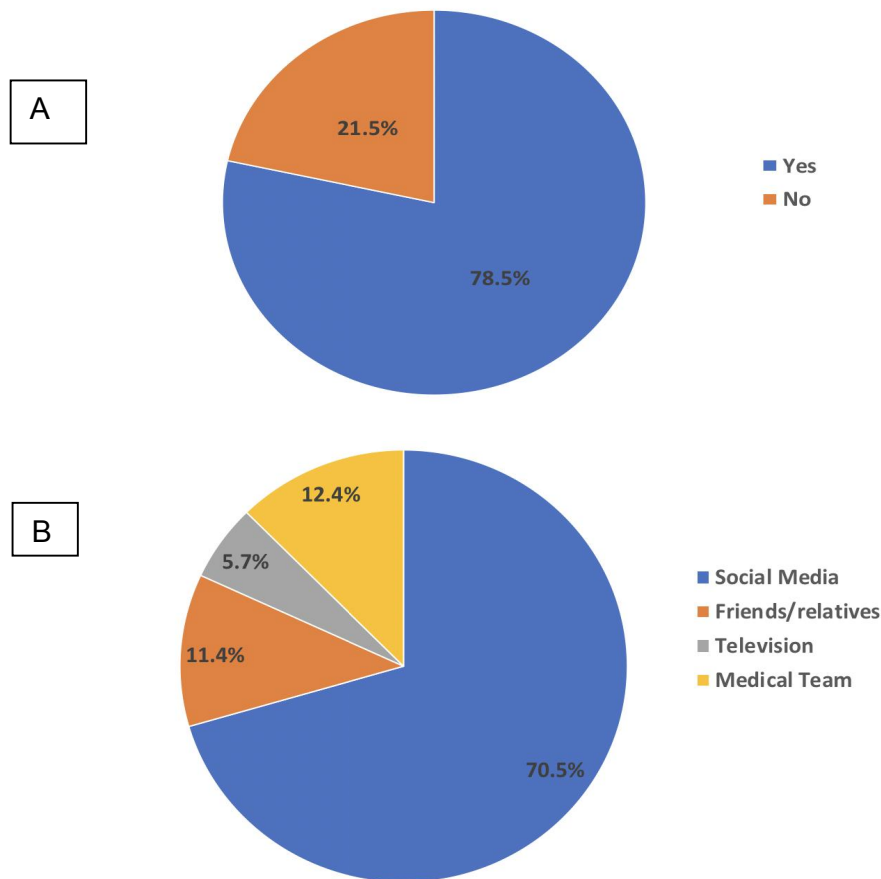
## 3. RESULTS

Basic demographic characteristics of participants who were involved in this study (n=1390) are summarized in Table 1. Patients included in this study were predominantly female 89.7% (n=1246). Knowledge of respondents on burn showed that 78.5% of participants had previous knowledge about first aid in burns (Fig. 1A). About 70.5% have received their information mainly from social media. However, 12.4%, 11.4% and 5.7% have received their information mainly from medical team, friends or television respectively (Fig. 1B).

As shown in Table. 2, 85% of participants knew that skin has three layers. About 79.4% knew that 1<sup>st</sup> degree burns effect outmost layer of skin, 90.7% knew that 2<sup>nd</sup> degree burn effect outer 2 layers of skin, 84.1% knew that 3<sup>rd</sup> degree burn effect all 3 layers of skin. However, only 51.4% believed that washing burned area with cold water is the immediate first aid in 1<sup>st</sup> degree burn, 38.3% and 61.7% believed that going to nearest emergency department is the immediate first aid in 2<sup>ed</sup> and 3<sup>ed</sup> degree burn, respectively. Around 46.7% agreed remove the clothes stuck to the burned skin in case of burns. Almost, 79.4% of participants think going to the emergency department is needed If the burn affects one of the joints.

**Table 1. Demographic characteristic of participants; Table represents demographic characteristics of the study population; data presented in actual patient's percentage (%)**

Demographic characteristic		Actual patients (Percentage%)
Sex	Male	(10.3%)
	Female	(89.7%)
Age	<18	(12%)
	19-30	(31.8%)
	31-45	(30%)
	>46	(26.2%)
Education Level	High school	(40.2%)
	Bachelor or higher	(59.8%)
Working/Studying status	Student in Medical area	(23.4%)
	Student in Non-medical area	(20.6%)
	Employee in Medical area	(5.6%)
	Employee in Non-medical area	(22.4%)
Monthly income	Not working	(28%)
	<5000 SR	(47.7%)
	5000-10,000 SR	(17%)
	10,000-20,000 SR	(17%)
	>20,000 SR	(18.2%)



**Fig. 1. General information about First aid in burn situations among participants: 1.A. Previous knowledge; 1.B. source of information**

**Table 2. Assessment of knowledge about burns among participants**

Variable		Responses (Percentage%)
Number of skin layers	One layer	0
	Two layers	(2.8%)
	Three layers	(85%)
	I don't know	(12.1%)
1 <sup>st</sup> degree burn	Effect outmost layer of skin	(79.4%)
	Effect outer 2 layers of skin	(0.9%)
	Effect all 3 layers of skin	(13.1%)
	I don't know	(6.6%)
2 <sup>nd</sup> degree burn	Effect outmost layer of skin	(0.9%)
	Effect outer 2 layers of skin	(90.7%)
	Effect all 3 layers of skin	(0.9%)
	I don't know	(7.5%)
3 <sup>rd</sup> degree burn	Effect outmost layer of skin	(11.2%)
	Effect outer 2 layers of skin	0
	Effect all 3 layers of skin	(84.1%)
	I don't know	(4.7%)
First aid in 1 <sup>st</sup> degree burn	Wash burned area with cold water	(51.4%)
	Apply burn ointment	(29.9%)
	Go to nearest emergency department	(9.3%)
	Need plastic surgery	0
First aid in 2 <sup>nd</sup> degree burn	I don't know	(9.3%)
	Wash burned area with cold water	(4.7%)
	Apply burn ointment	(47.7%)
	Go to nearest emergency department	(38.3%)
First aid in 3 <sup>rd</sup> degree burn	Need plastic surgery	0
	I don't know	(9.3%)
	Wash burned area with cold water	(7.5%)
	Apply burn ointment	(3.7%)
In case of burn, it is advised to remove the clothes stuck to the burned skin	Go to nearest emergency department	(61.7%)
	Need plastic surgery	(17.8%)
	I don't know	(9.3%)
	Agree	(46.7%)
If the burn affects one of the joints, it is advised to go to the emergency department	Disagree	(43.9%)
	I don't know	(9.3%)
	Agree	(79.4%)
	Disagree	(2.8%)
	I don't know	(17.8%)

Past history of burn among participants shows that hot liquid or steam is the major cause represents 42.2% of burns. Furthermore, 28.9%, 20.5% and 8.4% of cases caused by boiled water, oven flame or electricity respectively (Fig. 2A). Most common affected areas in burn cases are hands with 50% of cases among respondent (Fig. 2B) with 1<sup>st</sup> degree burn in 50% too (Fig. 2C). Assessing immediate action taken by participants in burn case shows that majority (56.4%) washed burned area with cold water. However, 34.5% applied traditional home remedy

including: 13.8%, 12.8%, 5.8 % and 2.1% applied toothpaste, honey, tomato paste or egg (Fig. 2D). Major complications were forming blisters which represents 36.4% of reported complications (Fig. 2E).

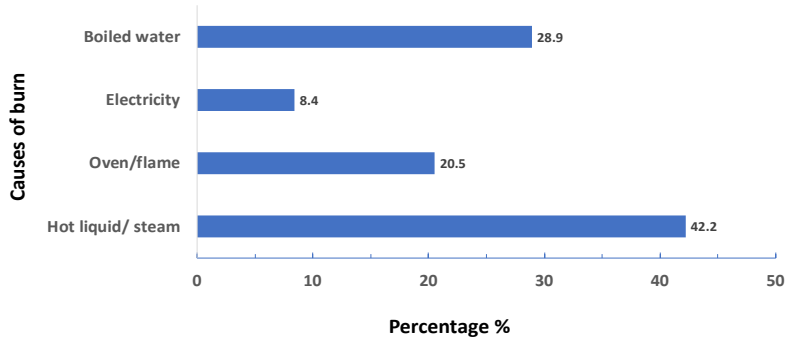
#### 4. DISCUSSION

Fast and prompt management of burns is essential for a better outcome of burned subjects. Therefore, appropriate first aid treatment can decrease significantly the situation

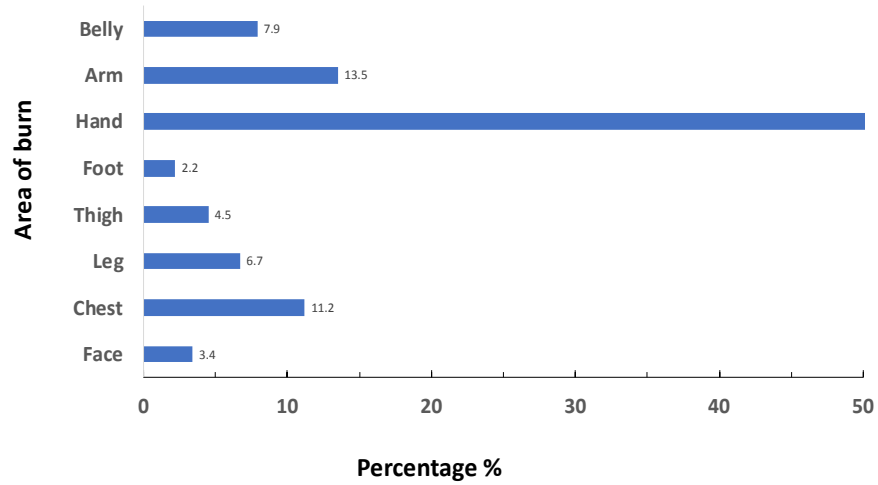
of the burns and enhance the survival from the burn [17,18,19]. Community awareness programmes for first aid burn injuries towards the general population have a great impact on educating people towards how to react to burn injuries [20]. However, data showed that these

educational supports are limited in developing countries [13,17,20]. Therefore, In our study, we aimed to assess the general knowledge and attitude regarding burn first aid among Makkah Al-Mukarramah population in the western area of Saudi Arabia.

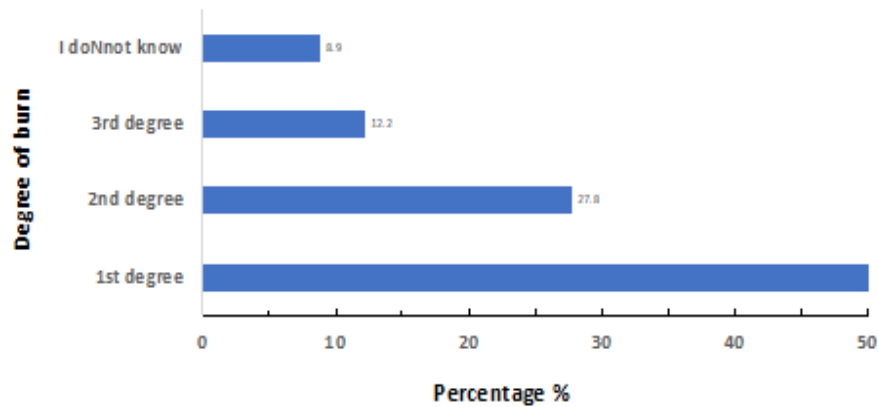
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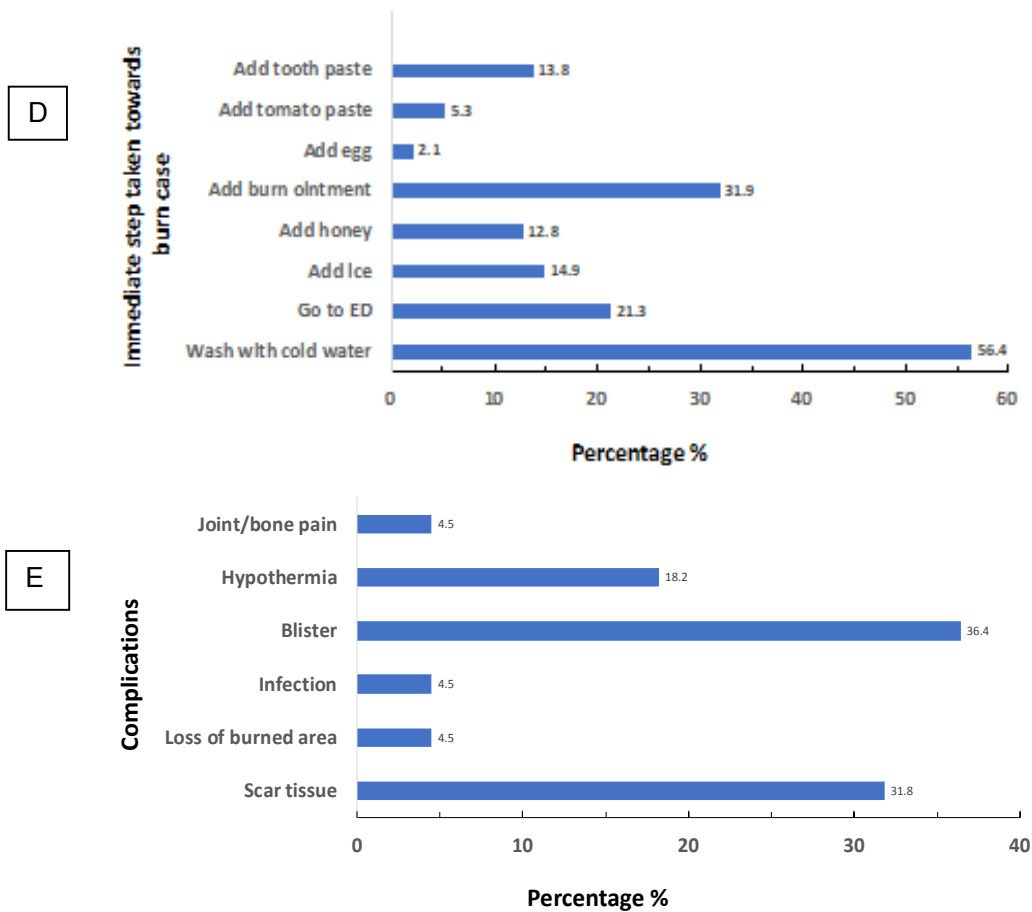


B



C





**Fig. 2. Past history of burn among participants; 2.A. Causes of burn, 2.B. Areas of burn, 2.C. Degree of burn, 2.D. Immediate step taken towards burn case, 2.E. Complications**

In our study, regarding the knowledge towards burn first aid, about 85% of participants knew that skin has three layers. About 79.4% knew that 1<sup>st</sup> degree burns effect outmost layer of skin, 90.7% knew that 2<sup>nd</sup> degree burn effect outer two layers of skin, 84.1% knew that 3<sup>rd</sup> degree burn effect all the three layers of skin. However, only 51.4% believed that washing burned area with cold water is the immediate first aid in 1<sup>st</sup> degree burn, 38.3% and 61.7% believed that going to nearest emergency department is the immediate first aid in 2<sup>nd</sup> and 3<sup>rd</sup> degree burns, respectively. Around 46.7% showed knowledge to remove the clothes stuck to the burned skin in case of burns. Almost, 79.4% of participants think going to the emergency department is needed if the burn affects one of the joints. The level of education is essential for an excellent and prompt first aid practice. The majority of our study participants 59.8% were well-educated holding a bachelor degree.

Our data were in agreement with Kattan et al. as they showed in their study that the majority were university graduates about 51.1% holding a bachelor's degree [21]. Moreover, Kattan study also reported that the participants first aid towards burn injury was as the following : around 72.1 percent tried to remove clothing and accessories from the burned injured area; 63.9 percent of them applied water ; 88.6% applied cold water. In addition, 33.9 percent of them wrapped the burned area; and 63.5 percent contacted medical assistance.

Cuttle et al. did a similar study in Australia reported that 80.2 percent of burn victims, applied cold water and only 12.1 percent did this for twenty minutes or more[22]. A study in Turkey, reported that 39.6 percent applied cold water alone to the burn parts [23]. In Kwa-Zulu Natal, the 26 percent of the participants applied water and only one percent applied water for

around ten minutes [24]. Wallace et al. showed in his survey that around 30 to 50 percent respondents had efficient knowledge [24].

In our study the participants attitude reported that hot liquid or steam is the major cause represents of burns. Boiled water, oven flame or electricity comes after. Most common affected areas in burn cases were the hands. For using traditional therpaires most of them applied toothpaste, honey, tomato paste or egg. However, their major complications were forming blisters that were an annoying complication. In Kattan et al. study the participants reported using honey and toothpaste only [21]. Hsiao et al. reported in his survey that 18 % of the respondent used toothpaste for treating burns. In our study we had some limitations as the number of the repondants small and the females were more than males. Incidence-Prevalence bias, also known as Neyman bias, that can occur in research studies in which extremely sick individuals or extremely healthy individuals are excluded from the final results of the study which may lead to biased results. Our results from this study is essential to be taken into consideration by healthcare authorities to enhance the awarness programmes and spread them in the community.

## 5. CONCLUSION

In conclusion, we found that population of western region have fair knowledge and attitude towards first aid in burns. However, traditional home remedy practice still present. Health Awareness Campaigns still needed to improve community attitude towards burn injuries managements furthermore.

## CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

Ethical approval was obtained from IRB commity at0. College of Medicine, Umm Al-Qura University. Approval number (HAPO-02-K-012-2-21-02-548).

## COMPETING INTERESTS

Author has declared that no competing interests exist.

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