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Knowledge and Practices Related to Burn First Aid: A Cross Sectional Study

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ABSTRACT
Burns are injuries to the skin and underlying tissues caused by various factors, such as heat, chemicals, electricity, radiation or friction. First aids represent the first line of treatment before getting the medical aid. This survey aims to evaluate first aid knowledge and practice for the management of burns among the general population. This was a cross-sectional study conducted in general population of our study area, included 500 study participants, for the duration of one year. Data werecollected by using convenience sampling technique. A pre-structured questionnaire in the local language was designed, it comprised of three parts demographic data, burn first aid knowledge and burn first aid practice. Majority of the study participants were from the age groups of 30-50 years followed by 15-29 years, female showed the predominance in the study, majority of the of the study participant had education level more than graduation. 57.3% of the participant had prior knowledge of applying first aid to burn victims and 73.1% of the study participant had history of exposure to burn injury. 82.5% of the study participants had knowledge about stop, drop and roll after clothes catches fire, only 43.9% of the participant knew to apply cold water if hot oil spills on the hands or body. majority of the study population had education level more than degree level, so almost of the study participants were having good knowledge of burns first aid. Also they were practicing these burns first aid on victims.

INTRODUCTION

Burns are injuries to the skin and underlying tissues caused by various factors, such as heat chemicals, electricity, radiation or friction. They results in damage to the affected area, which can range from mild to severe depending on the depth and extent of the burn. Burns are typically categorized into degrees based on their severity. First degree burns, are superficial burns that only affect the outer layer of the skin, call the epidermis. They usually appear as red, dry and painful areas. Sunburns are common example of first degree burns. Second degree burns, which affect both the outer layer of the skin and underlaying layer called the dermis. They cause redness, pain, swelling, and the formation of blisters. Sec-degree burns can be further classified into two types:

- Superficial partial-thickness burns involve the upper layers of the dermis and are characterized by a moist, pink or red appearance. They can be painful and may heal within a few weeks without scarring
- Deep partial-thickness burns, extend deeper into the dermis, resulting in a whitish or mottled appearance. They may be less painful initially but can cause scarring and may require medical intervention for proper healing

Third degree burns are the most severe and involve all layers of the skin, including the deeper tissues. The affected area may appear white, charred, or leathery. The-degree burns oftern results in loss of sensation because the nerve endings are damaged. medical attention is crucial for these burns, as they typically require specialized treatment and may require surgical intervention, such as skin grafting for proper healing.

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].

The costs spent for treatment of injuries resulting from burns represent a big load on the healthcare systems and governments. The costs spent for treatment of children having burn injuries in the united states of America within the year 2000 were more than US$ 211 million. In norway. Moreover, the costs spent by a hospital of burn management in 2007 exceeded €10.5 million[2]. First aids represent the first line of treatment before getting the medical aid. Any intervention during the first aid care should be effective and simple[5]. Simple first aids following a burn injury have been shown to improve outcome. Adequate first aids are associated with improved outcomes by decreasing wound depth and grafting requirements and also decrease the time of healing. Conversely the cultural beliefs and traditions can make the condition worse[4].

A study conducted by Riaz in Nigeria about the practice of first aid in burn related injuries which revealed that 23.8% of the burn patients did not receive any form of first aid at their first presentation, 29.2% of cases received irrigation of their wounds by water and 12.5% used raw eggs on the burn wound. The rate of wound complication was higher in those who did not receive water irrigation as a first aid (35.3%) in comparison with those received it (18.4%)[7]. This survey aims to evaluate first aid knowledge and practice for the management of burns among the general population.

MATERIALS AND METHODS

This was a cross-sectional study conducted in general population of our study area, included 510 study participants, for the duration of one year, after getting informed consent from participants, approved by institutional ethical committee and the study population included members of general population above 15 years of age. Data were collected by using convenience sampling technique.

Method: A pre-structured questionnaire in the local language was designed, it comprised of three parts demographic data, burn first aid knowledge and burn first aid practice. Demographic data included items such as age, gender, nationality, place of residence, educational level, financial level and job. Burn first aid knowledge and practice parts of the survey assessed participant's knowledge regarding the basics of burn first aid and when to seek medical assistance. Data were collected by investigators themselves (directly interacting with the participants) using a structured precoded and pretested questionnaire.

Collected data were entered in the microsoft excel 2016, for further statistical analysis, categorical variable were expressed in terms of frequency and percentage, while quantitative data were expressed in terms of mean and standard deviation. Statistical analysis were done with the help of statistical software SPSS version 25.

OBSERVATION AND RESULTS

In the present study, there were total 510 study participants and majority of the study participants were from the age groups of 30-50 years followed by 15-29 years and more than 50 years of age. Female

Table 1: Socio-demographic distribution of study participants

Parameters	Frequency	Percentage
Age		
15-29 years	203	39.8
30-49 years	251	49.2
>50 years	56	11.0
Gender		
Male	144	28.2
Female	366	71.8
Education		
Bellow graduation	133	26.1
Graduation and above	377	73.9
Occupation		
Student	85	16.7
Housewife	174	34.1
Labourer and others	65	12.7
Jobs (private and government)	75	14.7
Children	60	11.8
Retired	10	2.0
Unemployed	41	8.0
Prior knowledge of applying first aid to burn victims		
Yes	292	57.3
No	218	42.7
History of exposure to burn injury (self or other)		
Yes	373	73.1
No	137	26.9

Table 2: Distribution of knowledge about burns first aid among study participants

Knowledge	Frequency	Percentage
Do you know stop, drop and roll after clothes catches fire	421	82.5
Do you know to apply cold water if hot oil spills on the hands or body	224	43.9
Do you know all burn injuries must be treated in the hospital	209	41.0
Do you to never apply raw egg or herbs to burn wounds	400	78.4
Do you know burn can lead to permanent injuries	447	87.6
Do you know burn injuries can lead to mental disorders	440	86.3

Table 3: Distribution of practices of burns first aid among study participants

Practices	Frequency	Percentage
Remove clothing or accessories	417	83.4
Seek primary medical assistance	492	98.4
Wrap injury with clean piece of cloth	306	61.2
Apply water to injured area	273	54.6
Applying water duration (min)		
Less than 5	68	25.2
5-10	124	45.9
10-15	51	18.9
More than 15	27	10.0

Table 4: Distribution of level of knowledge and practice of burn first aid among study participants

Statements	No.	Percentage
Knowledge score (Mean±SD)	----------4.08±1.86----------	
Level of knowledge		
Low	259	51.8
Intermediate	230	46.0
High	11	2.2
Practice score (Mean±SD)	----------2.17±2.07----------	
Level of practice		
Low	310	62.0
Intermediate	159	31.8
High	31	6.2

showed the predominance in the study, majority of the of the study participant had education level more than graduation. Nearly 57% of the study participant had prior knowledge of applying first aid to burn victims and 73.1% of the study participants had history of burns shown in Table 1-4.

DISCUSSIONS

Burn injuries can happen at any time and at any place during day or night and so the first responders at the scene are usually bystanders at the site[1]. The pre-hospital management of burn injuries should be to get the correct patient to the right hospital at the right time period to avoid complications of burns[2]. There is a significant gap in the knowledge of laymen in initial management of burn patients before they reach a hospital setting. The primary goal of first aid in burns is to limit tissue injury, stabilize the vasculature, minimize edema, give the right level of analgesia and improve outcomes[3]. So improving the first-aid knowledge and steps of primary burn prevention is essential to each individual[4]. First aid is urgent care given immediately for patients to keep their functional organs or save a patient's life[5]. It effectively decreases the chance of prolonged hospitalization and provides plenteous finance, especially in improving advanced countries[6].

In our study we have conducted survey among 510 people, in which we have observed that nearly 89% of the study participants were from the age group of 15-49 years and majority of the population were female and more than 70% of the study participant had education more than graduation level, also among study population majority of the study participants were housewife followed by students. Among all the study participants we have observed that 57.3% of the participant had prior knowledge of applying first aid to burn victims and 73.1% of the study participant had history of exposure to burn injury (self or others).

A recent study was conducted on 400 undergraduate medical and non-medical students in 2020 to assess their knowledge on first aid

management of burn victims[7]. A significant gap was noticed in the knowledge of both medical as well as non-medical students however medical students still seemed to know more about BFAT (burn first aid treatment). It was concluded that students would benefit more from formal training, online sessions and hands on experience to increase their confidence in these situations. Not just medical students but teaching about BFAT to the masses or students undergoing other students was considered to be imperative. A similar study was conducted in 2019 in hebron, palestine on the knowledge of relatives about first aid management of burns[8]. The majority of the 151 were educated up to high school or higher but lacked awareness in the basic management of burns. According to the study by Fallatah *et al.*[9] 70.6% (n = 271) of the study population have previous knowledge of applying first aid for burns, while 27.9% (n = 107) of them do not have previous knowledge of it.

In the present study 82.5% of the study participants had knowledge about stop, drop and roll after clothes catches fire, only 43.9% of the participant knew to apply cold water if hot oil spills on the hands or body. 78.4% of the study participant were knew about to never apply raw egg or herbs to burn wounds. 87.6% of the study participant were feeling that, burn can lead to permanent injuries and 86.3% of the participant were feeling burn injuries can lead to mental disorders. According the study conducted by Fallatah *et al*.[9] found that, 78.4% (n = 302) of the study sample knew that it's true to lie down and spin on the floor when their clothes burn and 62.8% (n = 241) of them think that it is false to put raw eggs or herbs on the wound. 59.9% of the sample study think that water should be used for burns. Two previous studies conducted in Saudi Arabia[10,11] showed similar results with majority of respondents knew to remove clothes during burns, apply water and to seek medical assistance.

Another study by AlQahtani, *et al*.[10] 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.

In the present study 98.4% of the study participants were found seeking for the primary medical assistance, 83.4% of the study participants were done practice of removing clothing or accessories, wrap injury with clean piece of cloth was practiced by 61.2% of the study participants and 54.6% of the study participant practiced to apply water on burns. In some studies regarding what to do in case of a burn injury the most commonly used method was putting cool water in wales study (82%), while in Saudi Arabia the percentage was 26.30% which is similar to the study conducted in Kwa-Zulu Natal, where the percentage was 26%[12]. However, this percentage is lower than Quinn *et al*.[13] results who conducted a study in Milas, Turkey about first aid home treatment for burns and it showed that 39.6% have applied cold water. Also these above percentage of doing first aid practices were less than our study.

In New South Wales, Harvey *et al*.[14] 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%. In New York, Taira *et al*.[15] 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.

To practice these burns first aid need knowledge about burns and knowledge about precaution should taken while using burns first aid in order to avoid big injury. In our study majority of the study participant had education level more than degree level and most of them had good knowledge of burns first aid, these observation were matching with study conducted by Kattan *et al*. who reported that the majority of their respondents were university graduates, of which 51.1% had a bachelor's degree[11]. This education level was lower compared to our study.

CONCLUSION

From overall observation and discussion with other study in our study we can conclude, that majority of the study population had education level more than degree level, so almost of the study participants were having good knowledge of burns first aid. Also they were practicing these burns first aid on victims. But they felt that burns leads to the permanent injury and also leads to the mental disorder. Thus we recommend to aware and give knowledge to the people about other option to get rid of permanent injury with the help of plastic surgery.

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