

Pre-hospital Primary Treatment of Burn Injuries: Assessment of Knowledge of Community on the Management of Burn Patients

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ABSTRACT

Objectives: To assess the degree of knowledge on the management of burn injuries and the first aid provided by the laymen before the arrival to the hospital

Study Design: Prospective cross sectional study

Place and Duration of Study: POF Hospital, Wah Cantt from 1st January 2018 to 30th June 2018.

Methodology: Two hundred and three patients with scald, flame injuries, chemical burns, electrical, and other types of burns were included. A predefined questionnaire was administered to all the burns victims who were admitted into the POF hospital during the study period.

Results: Overall results showed poor knowledge among the burns patients who presented at the burns department, 165 individuals had no knowledge of first aid. The majority took no immediate action for the burn injuries, while a minority used toothpaste, cold water and cooling to ease the pain. There was no association of gender with the type of immediate action provided to the patient before the arrival to the burns Centre. The management of the paediatric population was distinctively managed more appropriately compared to other burnt patients ($p < 0.001$). It was found that gender was significantly associated with the time at which burn injuries were acquired ($p = 0.014$). It was found that in the morning time, males were more frequently presented with burn injuries while in the evening, the case was reversed.

Conclusion: There are significant gaps in the knowledge of the common man concerning the first aid management of burns victims.

Key words: Knowledge, Burn injuries, Laymen

INTRODUCTION

Burns injuries are defined by trauma caused by extreme temperatures, electricity, UV radiation, fire or heat, and steam.¹ Burn accidents lead up to 265,000 deaths per year and have also been known to be one of the main reasons for accidental injuries in paediatric medicine.² There are three main types of burn classifications, namely, first-degree burn, second-degree burn and third-degree burn. The type of burn will help assess emergency care.²⁻⁴

Anyone is susceptible to burn injuries at any time of the day. Some occupations such as fire fighters, kiln workers, furnace, or chemical industry poses increased threat to burn injuries however, the risk remains the same for all individuals from all fields of life. The immediate intervention provided to the burns patients in the form of first aid exactly after sustaining the injury has a direct impact on the extent and depth of the burns wound and largely has an impact on the final patient outcome.^{3,4} Therefore, it is important for the general public to have a thorough knowledge on the first aid management of burns patients.

The goal of providing first aid to patients with burn injury is to cease the burning process, provide cooling to the burnt region, provide pain relief to the patient, and cover the burn preventing infection.⁴ Despite the standard guidelines published and promoted by different organizations, the laymen/general public remain ignorant and oblivious to the first aid and immediate management of patients with burn injury.⁵⁻⁸

MATERIALS AND METHODS

This prospective cross sectional study was conducted at POF Hospital, Wah Cantt from 1st January 2018 to 30th

June 2018. A total of 203 patients with scald, flame injuries, chemical burns, electrical, and other types of burns were included. A predefined questionnaire was administered to all the burns victims who were admitted into the POF Hospital during the study period. The demographic data of patients, the site of burn injury, the time (evening or morning) at which the injury was sustained, the age and gender of patients, the occupation of the patient, the aetiology of burn injury, the immediate actions taken by the patient or his attendant to relieve pain before arrival in the burns centre, and other variables were included. The data was entered and analyzed through SPSS-26 Independent t-tests and chi-square tests were used to check for association between variables. A p-value < 0.05 was considered as significance.

RESULTS

Overall results showed poor knowledge among the burns patients who presented at the burns department. 32 out of 102 people thought water was harmful. Majority had no knowledge of first aid. Majority did not perform immediate cooling of the burnt parts. Majority took no immediate action for the burn injuries, while a minority used toothpaste, cold water and cooling to ease the pain. There was no association of gender with the type of immediate action provided to the patient before the arrival to the burns Centre. Furthermore, the management of the paediatric population was distinctively managed more appropriately compared to other burnt patients ($p < 0.001$). It was found that gender was significantly associated with the time at which burn injuries were acquired ($p = 0.014$). It was found that in the morning time, males were more frequently presented with burn injuries while in the evening, the case was reversed (Tables 1-5).

Table 1: Frequency of first aid knowledge according to gender and occupation

Variable	First Aid Knowledge			P value
	Assumed water to be harmful	No prior knowledge of first aid	Performed cooling for 5 min	
Gender				
Male	16 (13%)	105 (85.40%)	2 (1.60%)	0.135
Female	16 (20%)	60 (75%)	4 (5%)	
Occupation				
Professionals	2 (6.70%)	28 (93.30%)	-	0.099
Children	14 (23.70%)	43 (72.90%)	2 (3.40%)	
House wives	10 (20%)	36 (72%)	4 (8%)	
Labourers, drivers & related workers	2 (7.70%)	24 (92.30%)	-	
Retired	-	4 (100%)	-	
Students	4 (11.80%)	30 (88.20%)	-	

Table 5: Association of immediate action with the aetiology of burn and occupation of patients

Variable	Immediate action				P value
	Tooth Paste	Nil	Other	Water	
Aetiology					
Boiling hot water	18 (29.50%)	34 (55.70%)	6 (9.80%)	3 (4.90%)	0.000
Contact	6 (15.80%)	22 (57.90%)	4 (10.50%)	6 (15.80%)	
Flame burn	2 (2.30%)	68 (79.10%)	4 (4.70%)	12 (14%)	
Flash burn	-	8 (100%)	-	-	
Steam Burn	2 (20%)	6 (60%)	2 (20%)	-	
Occupation					
Professionals	2 (6.70%)	24 (80%)	4 (13.30%)	-	0.000
Children	18 (30.50%)	28 (47.50%)	8 (13.60%)	5 (8.50%)	
House wives	6 (12.00%)	38 (76%)	4 (8.00%)	2 (4%)	
Labourers, drivers & related workers	2 (7.70%)	18 (69.20%)	-	6 (23.10%)	
Retired	-	4 (100%)	-	-	
Students	-	26 (76.50%)	-	8 (23.50%)	

DISCUSSION

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.⁹ 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.¹⁰ There is a significant gap in the knowledge of laymen in initial management of burn patients before they reach a hospital setting.

Table 2: Frequency of patients who received immediate cooling according to their occupation and gender

Variable	Immediate Cooling		P value
	Yes	No	
Occupation			
Professionals	-	30 (100%)	0.065
Children	5 (8.50%)	54 (91.50%)	
House Wives	8 (16%)	42 (84%)	
Labourers, drivers & related workers	4 (15.40%)	22 (84.60%)	
Retired	-	4 (100%)	
Students	8 (23.50%)	26 (76.50%)	
Gender			
Male	11 (8.90%)	112 (91.10%)	0.05
Female	14 (17.5%)	66 (82.50%)	

Table 3: Gender distribution according to the time of burn injury

Gender	Time of burn		P value
	am	Pm	
Male	79 (64.20%)	44 (35.80%)	0.014
Female	38 (47.50%)	42 (52.50%)	

Table 4: Mean age of patients and its association with their knowledge and the immediate therapy they received prior to the arrival to the burns centre

Variable	Age	P value
Immediate action		
Tooth Paste	18.79±23.28	0.002
Nil	28.17±18.459	
Other	14.63±11.798	
Water	18.1±11.866	
First aid knowledge		
Thought water harmful	23.38±22.829	0.898
No Knowledge	25.05±18.067	
Cooling for 5 min	24.33±18.096	

Our study focused on the knowledge of first responders on the initial management of burn patients before paramedics arrived. Overall results showed poor knowledge among the burns patients who presented at the burns department. Thirty two out of 102 people thought water was harmful. Majority had no knowledge of first aid, did not perform immediate cooling of the burnt parts and took no immediate action. Many of the participants used toothpaste and cold water to ease the pain. No link was found between genders as it did not affect the kind of immediate action that was to be provided by the responder till the patient reached the Burns Center.

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.¹¹ 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.

Another study was conducted in 2011 to assess the knowledge of 181 parents on whether they knew how to provide first aid to their children if they succumbed to burn injuries.¹² No difference was noted within ethnic groups of the parents at the outpatient clinics except for a few who would use agents such as oil, milk or butter. Parental awareness was encouraged in this research as parents are the first responders in these situations and only adequate knowledge would allow them to save their child's life.

A similar study was conducted in 2019 in Hebron, Palestine on the knowledge of relatives about first aid management of burns.¹³ The majority of the 151 were educated up to high school or higher but lacked awareness in the basic management of burns. Many relatives were aware of running cool water on the affected area but lacked information concerning the duration of cooling of the affected site. The majority also resorted to unhelpful substances such as tomato and toothpaste to treat burns.

Another research study was conducted on the Majmaah community of Saudi Arabia in 2018.¹⁴ 390 people were asked questions about first aid management of burns considering this population was educated. Even though many participants had some knowledge about first aid there were still some significant gaps in their knowledge. Majority were familiar with the stop, drop and roll protocol and also knew about not using impractical methods such as using herbal substances or raw eggs to treat burns.

One more study looked at the knowledge of the population considering that 40% of the individuals who were given the questionnaires had taken courses about first aid which also resulted in poor scores.¹⁵ This study was completed in 2017 and was done on 1229 individuals. Some healthcare workers had also taken part in the research and more of their answers were correct as compared to those who had taken first aid training. This study highlighted the need for significant improvement in the methods to teach individuals about the proper protocol of first aid training in burn victims so that more lives can be saved.

However, an interview based may have provided more insight into the factors leading to poor knowledge about first aid. A greater sample size would also encompass individuals from different social backgrounds.

CONCLUSION

There seems to be significant gaps in the knowledge of the common man concerning the first aid management of

burns victims. More research and innovation is needed in finding new methods to teach people how to give initial management with limited resources until the patient reaches the hospital.

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