



ARE WE ADEQUATELY PREPARED: PREHOSPITAL MANAGEMENT OF BURNS

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ABSTRACT

Despite the impressive advance in the science of injury control and prevention, burn injuries have remained the neglected disease of modern society and are still regarded as an act of fate and bad luck. Identifying areas of prehospital management knowledge deficits should be useful in developing prevention programs aimed at decreasing the complications of the burn injury. A Cross sectional descriptive study was conducted among the health care workers in a tertiary care hospital in Srinagar about the knowledge of pre hospital management of burns. The study results showed that 85.2% (196 participants) of the sample had good knowledge on the importance of prehospital management in burns. Even then correct information regarding the cooling of burns using water and the importance of pre hospital burns management to be highlighted through various media for the general awareness of the public.

KEYWORDS : Prehospital management, burn injury, cooling

INTRODUCTION

The World Health Organization (WHO) states that burns are a significant global public health concern. Worldwide, nearly 265,000 deaths occur annually due to fires, alongside other types of burns, such as electrical burns.¹ In Brazil, approximately 1,000,000 burn incidents occur each year. Of these, only 100,000 seek hospital care, and an estimated 2,500 victims die directly or indirectly as a result of their injuries. Burns primarily occur at home or in the workplace.² Women and children are more likely to suffer burns at home, often in the kitchen, due to hot liquids, direct flames, or stove explosions. Conversely, men are more likely to experience burns in the workplace due to fires, as well as chemical and electrical burns. Millions of burn survivors are left with lifelong disabilities and disfigurements, often leading to stigma and social prejudice.³ According to WHO Global Health Estimates (2020), Malaysia's mortality rate due to burn trauma increased from 0.9% (214 deaths) per 100,000 people in 2000 to 1.1% (336 deaths) per 100,000 people in 2019. The prevalence of fires over the past two years was 6.4%, and burn injuries among children stood at an alarming 54% (Mani, 2019).⁴

In India, burns are more common among lower-income populations due to overcrowding, open-stove cooking, floor-level cooking, and poor housing conditions. Children, due to their physiological, psychological, and developmental differences, have a high risk of sustaining burn injuries. Nurses play a crucial role in providing family-centered care, as burn injuries and their required treatments often cause distress, pain, and anxiety. Timely and appropriate management can improve survival rates and reduce the severity of injuries.⁵

Despite limited research evidence, various prehospital remedies such as cold or lukewarm water, ice, oils, powders, and natural plant therapies are frequently used. In Malaysia, there is a strong belief in traditional treatments, with many individuals preferring home remedies like soy sauce, butter, or toothpaste over professional medical assistance, especially for minor burns. While such treatments may not significantly impact minor burns (below 10% total burn surface area [TBSA] for first- and second-degree burns), the risks are considerably higher for major burns exceeding 20% TBSA or third-degree burns.⁶ Healthcare professionals responsible for burn patients should have comprehensive knowledge of physiological changes following burns and possess strong assessment skills to detect subtle changes in a patient's condition. Providing care for burn patients is both challenging and rewarding, requiring expertise in clinical assessment, pain management, wound care, and psycho-social support.

Background Of The Study

Healthcare professionals are often the first responders to burn emergencies. Early intervention—whether by patients themselves, bystanders, or medical personnel—can significantly improve treatment outcomes. According to Oliver (2017), providing first aid before emergency medical services arrive can enhance patient survival rates. Immediate and appropriate prehospital measures help minimize burn severity, prevent complications, reduce hospital stays, and limit the need for surgical intervention (Tan Chor Lip, 2019). Emphasizing the importance of a comprehensive grasp prehospital management extends not only to healthcare professionals but also to the wider community, underlining its significance in ensuring timely and effective responses to burn incidents.

This study aims to assess healthcare professionals' knowledge and attitudes regarding prehospital burn management. Understanding their baseline knowledge is crucial for developing effective educational programs and awareness campaigns. Additionally, this research identifies gaps in prehospital burn knowledge, common practices, and misconceptions. Traditional and home remedies remain widely used in many countries, highlighting the need for targeted educational interventions to enhance burn care preparedness.

Therefore, the proposed study aims to bridge this gap by investigating the knowledge, attitude and practice related to pre hospital management ultimately informing targeted educational interventions and improving overall burn care preparedness.

Aim Of The Study

This study aims to assess the level of knowledge regarding prehospital management of burns among healthcare professionals.

Methodology

Cross sectional descriptive study design was adopted for the present study. The knowledge of health care workers were assessed using a knowledge questionnaire. The study tool consisted of two sections Demographic data and knowledge of healthcare professionals regarding prehospital burn management

The sample for the study was 230. The study participants were selected by purposive sampling method. The health care workers who were present during study period and willing for the study were included in the study. Health care workers who are trained in burns and specialised in burns management

were excluded from the study

Experts in burns and reconstructive care validated the tool. Data collection was done by self administered tool. After data collection an educational program on pre hospital management of burns was conducted followed by distribution of educational materials. Data were analyzed using Microsoft Excel and presented in descriptive statistics.

RESULTS

Table 1: Distribution of participants as per demography (n=230)

DEMOGRAPHIC TABLE					
Characterisitics	Total	Doctors	Nurses	Paramedi cs	Others
Number	230	8	123	84	15
Sex					
Male	117	6	12	84	15
Female	113	2	111	0	0
Age (yrs)					
>25yrs	147	5	55	74	13
26 - 35	77	2	64	10	1
36 - 45	5	1	3	0	1
< 45yrs	1	0	1	0	0
Educational Qualificaton					
10+2	79	0	0	69	10
Graduate	142	7	116	14	5
Post Graduate	9	1	7	1	0
Occupation					
Doctors	08	8			
Nurses	123		123		
Paramedics	84			84	
Others	15				15
Training					
Yes	0	0	0	0	0
No	230	8	123	84	15

The study results showed that 10% (23 participants) felt it only prevented further injury and complications; whereas 2.2% (5 participants) felt it only reduced pain and discomfort; 2.6% (6 participants) felt only infection prevention; 85.2% (196 participants) of the sample had **good knowledge on the importance of pre hospital management in burns.**

81.3% (187 participants) reported that the first step in the pre hospital management of burns patient is to be removed from the source of burn, 7.4% (17 participants) were insisting on starting IV fluids directly; 2.6% (6 participants) of the responses were to apply any burn ointment; 8.7% (20 participants) reported to cover the burn dressing with a dressing.

60% (138) responded to assessing for potential airway injury if there is a history of inhalation or facial burns; 23% (53) responded to assess immediately after cooling the burns; 11.3% (23) responded to assess only if patient is conscious; 5.7% (13) to assess only after starting IV fluids.

The pre hospital intervention in chemical burn 62.2% were aware to irrigate the affected area with copious amount of water, where as 25.7% were of the opinion t use saline instead of water, 5.7% wanted petroleum jelly to be used and 6.5% were to apply heat to neutralize the chemical effect.

75.7% health care workers believed that if burn above 10% TBSA, burns involving any functional area, electrical and chemical burns to be referred to higher centre immediately, 11.7% were of the opinion that if burns more that 10% TBSA; 3.9% only electrical and chemical burns; and 8.7% if functional areas are involved to be referred to higher centre.

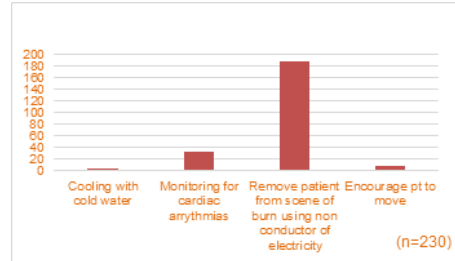


Fig 1 Bar diagram showing the priority act in pre hospital care setting in case of electric burns

Fig 1 reveals that 81.7% knew that the patient had to be removed from the scene with a non conductor of electricity, 1.3% believed to cool the burn using water, 3.1% wanted the patient to move from the scene on his own, 13.9% believed that monitoring for cardiac arrhythmias as the priority

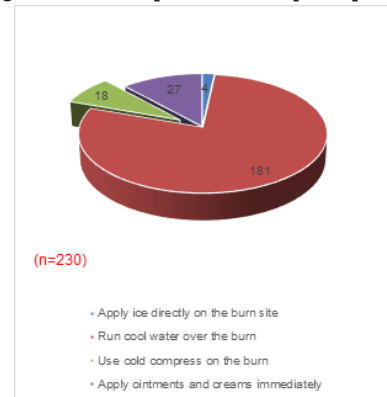


Fig 2. Chart showing the recommended method for cooling of burns in a pre hospital care setting

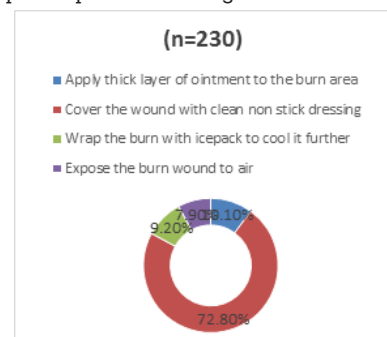


Fig 3. Chart showing the ways to protect the burn wound while shifting the patient to higher centre.

Exposing the burn wound will further increase the pain and there are high chances of infection. No ice to be applied as ice causes vasoconstriction to the area which can reverse the healing process.

DISCUSSION

Burns are preventable, an appropriate and simple treatment correctly applied can reduce the depth of injury, pain and complications. Identifying areas of knowledge deficit would be useful in developing prevention measures of various burns or treatment modalities aimed at decreasing mortality.

The Importance Of Pre Hospital Care Includes: Proper initial care can significantly improve the patient's survival chances and prevent complications, the first hour (known as Golden hour) following the burn injury is crucial in providing adequate intervention and stabilizing the patient, and prevention of complications like infection, shock, respiratory issues, and other life-threatening conditions. In a prehospital

setting importance to be given to maintain the body temperature in paediatric age group as they have a larger surface area to body volume ratio than adults, making them lose heat faster. It is also important to remember that in case of an elderly burn patient they have to shifted to higher centre as they may go into shock due to the reduced fluid resources and the comorbidity of old age.

Why Cooling Burns Is Important In Pre Hospital Setting:

Cooling of the burns should begin immediately after the burn occurs, ideally within 10-20 Minutes as cooling immediate cooling reduces the depth of the burn injury, prevent damage to the underlying tissues, minimizing long-term complications, provides immediate relief from the intense pain caused by thermal injury, reduces the inflammatory response, preventing excessive fluid loss and edema.

The Key Challenges in Prehospital Burn Management are

limited access to clean, cool water, difficulty cooling burns for 10–20 minutes, especially during transport, lack of specialized burn care tools in emergency settings and overlooking of psychological trauma in prehospital care.

For all pre-hospital emergencies, **SAFE approach** acronym can be used to remind the caregiver as to the first priorities in patient care: Shout or call for help, Assess the scene for dangers to rescuer or patient, Free from danger, Evaluate the casualty (Greaves and Porter, 1999; National Association of Emergency Medical Technicians, 1994; Basic Life Support, 1997; IHCD, 1994; IHCD, 1991). A systematic approach to burn care focuses on the six "Cs": Clothing, Cooling, Cleaning, Chemoprophylaxis, Covering and Comforting

CONCLUSION

Burn injuries are preventable, and appropriate initial treatment can reduce complications and improve outcomes. Immediate cooling, pain management, and early interventions are critical. Identifying knowledge gaps among healthcare professionals can help improve prehospital burn care through targeted training programs and public awareness initiatives.

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