

ORIGINAL ARTICLE**Awareness of Burn Management among Undergraduate MBBS Students**

Mohammad Zubair

Affiliations Ex-DMS, Allama Iqbal Memorial Teaching Hospital, Sialkot Corresponding Author: Dr. Mohammad Zubair, Shahab Pura, Sialkot. Contact # 0334-8108954 zubairss436@gmail.com Submission complete: March, 2026 Review began: April, 2026 Review ended: May, 2026 Acceptance: June, 2026 Published: September, 2026 Author contribution: MZ: Designed the research Pattern and drafted the manuscript.	ABSTRACT Objective: To assess the awareness knowledge of burn management among undergraduate MBBS medical students. Methodology: A cross sectional study was conducted among 380 MBBS students ranging from 1st year to Final Year. A questionnaire was prepared and data was collected accordingly. Result: By evaluating the data collected it was found that 63.2 percent of undergraduate medical students were females and 37.8 were males. Out of the 380 participants 14.8% were from first year, 13.7% from second year, 25.9% from third year, 23.7% from fourth year and 21.9% from Final year. However, 58.7 students received formal training or lecture on burn management and 41.3% have not received any formal training or lecture on burn management. Majority of the students have managed burn injuries multiple times. Conclusion: This concludes that a few students have received formal training on burn management. Adequate knowledge and training on burn management plays a critical role in reducing complications and improving patients survival and recovery. Key words: Cite this Article as: Zubair M.; Awareness of Burn Management among Undergraduate MBBS Students. <i>SIAL J Med. Sci. Sept-2026 V-5 (Issue-1, Overall Issue-17)::33-37</i>
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Introduction

Burn injuries, resulting from thermal, chemical, electrical, radiation, or friction exposure, constitute a significant global public health burden. Thermal insults, specifically scalds and flame injuries are predominate etiologically ¹.

The economic ramifications are profound; a systematic review identified a mean health-care cost of US\$ 88,218 per patient, with substantial regional expenditures such as the US\$ 26 million spent annually in South Africa on kerosene cookstove incidents ¹.

Beyond direct medical expenditures, indirect costs, including lost productivity, long-term rehabilitative care for deformities, and psychosocial trauma, which compound the socioeconomic strain. Demographically, females experience slightly higher mortality rates globally, often correlated with open-fire cooking and unsafe domestic appliances that risk igniting loose clothing ¹.

Furthermore, pediatric populations are highly vulnerable, with burns ranking as the fifth leading cause of non-fatal childhood inju-

ries; notably, while poor supervision is a major risk factor, a critical subset of these injuries stems from child maltreatment ¹.

Non-fatal burns are a primary driver of long-term morbidity, frequently resulting in prolonged hospitalization, permanent disfigurement, and social stigmatization. The epidemiological burden is heavily concentrated in low and middle-income countries (LMICs). For instance, India records over 1 million moderate-to-severe burns annually, while Bangladesh reports nearly 173,000 pediatric cases ¹.

In nations such as Bangladesh, Colombia, Egypt, and Pakistan, approximately 17% of pediatric burn victims suffer temporary disabilities, and 18% sustain permanent impairments ¹.

In rural Nepal, burns constitute the second most prevalent injury type, accounting for 5% of all disabilities ¹.

High-income countries also face notable volumes; in 2008, the United States recorded over 410,000 burn injuries, with 40,000 requiring acute hospitalization ^{1,2}.

In Pakistan, the estimated annual incidence ranges from 105,000 to over 800,000 individuals, underscoring an expanding cohort of survivors navigating long-term disability. Clinically, burns are classified by depth of tissue penetration and Total Body Surface Area (TBSA), categorized from first to fourth degree ³.

Accurate depth classification is frequently obscured acutely, as burn wounds can dynamically progress over 24 to 48 hours ³.

First-degree (superficial) burns are localized to the epidermis, presenting as erythema and pain without vesiculation (e.g., mild sunburn); long-term sequelae are rare, primarily limited to transient dyschromia ³.

Second-degree (partial-thickness) burns extend into the dermis, characterized by erythema, blistering, edema, and intense pain ³.

Third-degree (full-thickness) burns result in complete destruction of the epidermis and dermis, extending into the subcutaneous tissue, typically presenting with a white, leathery, or charred appearance ³.

Fourth-degree burns go through both layers of the skin and underlying tissue as well as deeper tissue, possibly involving muscle and bone. There is no feeling in the area since the nerve endings are destroyed. ³

Ethical Approval:

Before Initiating the study ethical approval was taken.

Objectives:

To assess the awareness knowledge of the burn management among under-graduate MBBS medical students.

Methodology

A cross sectional study was conducted among undergraduate medical students. Total 380 students ranging from 1st year to Final Year MBBS participated in this study.

Inclusion criteria:

Medical MBBS undergraduate students.

Exclusion criteria:

Post graduate medical students or students of other medical disciplines (not MBBS).

According to this criterion a brief questionnaire was prepared specifically for this study. It included demographic details,

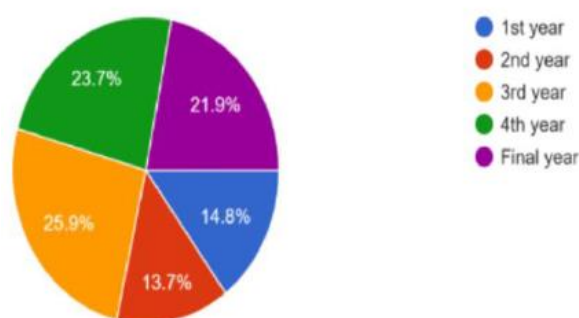
participants age, sex, year of study, knowledge of types of burns and management of different types of burns. The data was collected and details were noted on the questionnaire. On completion of study, the questionnaires were analyzed to obtain results.

Results

By evaluating the data collected it was found that 63.2 percent of undergraduate medical students were females and 37.8 were males. Out of the 380 participants, 14.8% were from first year, 13.7% from second year, 25.9% from third year, 23.7% from fourth year and 21.9% from Final year. However 58.7 students received formal training or lecture on burn management and 41.3% have not received any formal training or lecture on burn management. Most students have managed burn injuries multiple times.

All of the collected data was transferred to Microsoft Excel and their results were finalized by using graphs and pie charts.

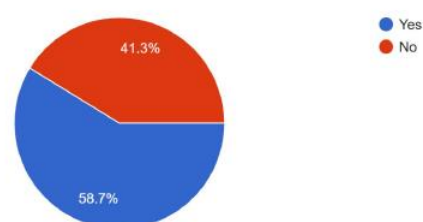
Year of Study?



Formal Training on burn management:

41.3% students did not receive any training on burn management while 58.7% received training on burn management

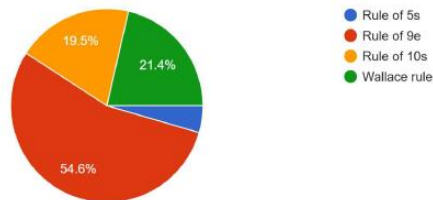
Have you received any formal training or lecture on burn management ?
378 responses



Wallace Rule of nine:

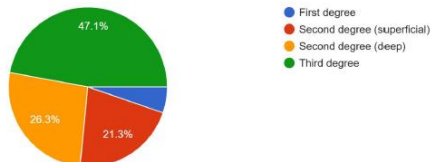
Awareness of Burn Management among Undergraduate MBBS Students

Which rule is commonly used to estimate percentage of body surface are burn
379 responses



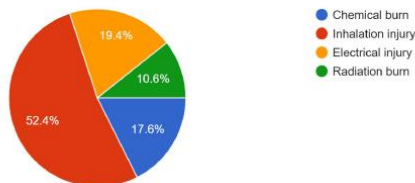
Degree of burn:

Which degree of burn is painless due to nerve destruction?
380 responses



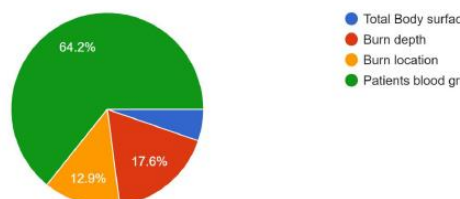
Types of Burns:

A patient with singed eyebrows and carbonaceous sputum is suspected of having
376 responses



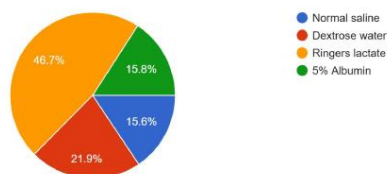
Severity of Burn assessment:

Which one of the following is not used to assess the severity of burn?
380 responses



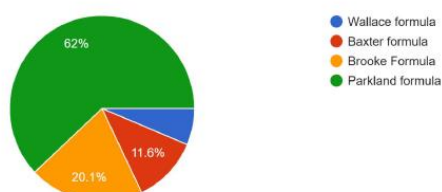
Fluid of choice for resuscitation:

What is the fluid of choice for resuscitation in burn patients?
379 responses



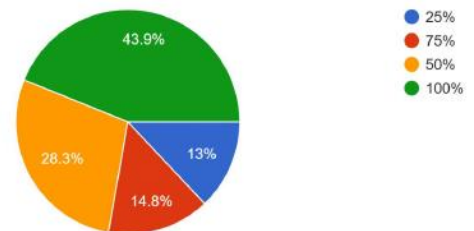
Formula used for fluid resuscitation in first 24 hours:

Which formula is commonly used for fluid resuscitation in the first 24 hours?
379 responses



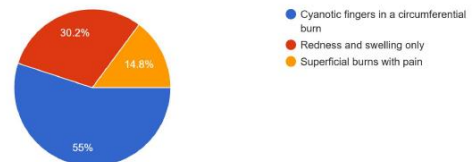
Parkland Formula:

In the Parkland formula how much fluid is given in the first 8 hours?
378 responses



Indication for escharotomy

Which of the following indicates the need for escharotomy?
378 responses



Discussion

In this study, undergraduate MBBS medical students were assessed about their knowledge of the clinical indication for escharotomy in burn management. The results demonstrated that 55% of students correctly identified that cyanotic fingers in a circumferential burn as the appropriate indication, while 30.2% incorrectly selected redness and swelling only, and 14.8% chose superficial burns with pain. Vetter et al conducted the same study and their results coincides with our figures. ⁴

The finding that just over half of the students answered correctly highlights a moderate level of awareness, but also reveals significant gaps in understanding. Escharotomy (emergency surgical procedure to treat deep circumferential burns) is a life and limb-saving procedure, typically indicated when a circumferential, full-thickness burn compromises distal circulation or ventilation (e.g., chest wall burns). Recognizing cyanosis or absent distal pulses is crucial, as delays in intervention may result in ischemia, necrosis, or even limb loss. The fact that nearly half of the respondents were unable to identify this clinical scenario reflects a potential deficiency in both theoretical knowledge and clinical preparedness. Mazeoetal described the same in their study. ⁵

The 30.2% of students who chose redness and the swelling may have confused the indications for escharotomy with general burn-associated inflammation, suggesting a lack of differentiation between superficial findings and signs of vascular compromise. Similarly, those who selected superficial burns with pain (14.8%) may have misunderstood the pathophysiology, as superficial burns do not lead to the compartment-like effects necessitating escharotomy.⁶

These results are consistent with previous literature indicating that medical students often lack adequate exposure to emergency burn management protocols. Since early recognition of escharotomy indications is critical in acute care, these knowledge gaps could translate into delayed or inappropriate patient care if not addressed.⁷

Overall, the data emphasize the need for improved teaching strategies in burn management, particularly focusing on emergency interventions such as escharotomy. Incorporating simulation-based learning, clinical case discussions, and hands-on workshops into the undergraduate curriculum may enhance both recognition and confidence in managing such critical scenarios.

Conclusion:

In conclusion, this study highlights the importance of strengthening undergraduate training in burn management, with emphasis on recognizing life-saving interventions such as escharotomy.

Recommendations; Public Health Prevention Strategies

To effectively mitigate the incidence and the severity of burn injuries, the comprehensive public health strategies must target systemic hazards through a multi-faceted approach:

- **Public Awareness Campaigns:** Enhance community education regarding domestic and occupational burn hazards.
- **Policy Development and Enforcement:** Formulate, implement, and strictly enforce legislative policies governing safety standards (e.g., building codes,

cook-stove regulations, and flame-retardant materials).

- **Epidemiological Surveillance:** Quantify the epidemiological burden and systematically identify population-specific risk factors.
- **Targeted Research Priorities:** Establish strategic research agendas focused on evaluating and promoting innovative, evidence-based interventions.
- **Prevention Program Implementation:** Launch community-specific burn prevention programs tailored to high-risk demographics.
- **Clinical Care Optimization:** Strengthen acute and long-term burn care infrastructure within health systems.
- **Capacity Building:** Expand institutional and systemic capacities to successfully execute and sustain these public health initiatives.

Clinical Guidelines for Acute Burn First Aid

1. Immediate Safety and Scene Assessment

- **Prioritize Responder Safety:** Personnel must not initiate first aid until scene safety is established. This includes neutralizing active hazards, such as disconnecting electrical currents or utilizing chemical-resistant personal protective equipment (PPE).
- **Cessation of the Thermal Insult:** Extinguish active flames utilizing techniques such as the "stop, drop, and roll" method, applying a fire-blanket, or using water/appropriate extinguishing agents. Subsequently, remove smoldering or contaminated clothing to halt the burning process.

2. Wound Management and Stabilization

- **Thermal Cool Down:** Irrigate the wound with cool, running water to dissipate residual heat and limit tissue damage.
- **Critical Precaution:** Avoid prolonged cryotherapy. Do not apply ice, as it induces vasoconstriction and deepens tissue necrosis. Limit the duration of water irrigation to prevent systemic hypothermia.

- **Chemical Decontamination:** For chemical exposures, immediately dilute and remove the agent by copiously irrigating the affected area with large volumes of water.
 - **Blister Management:** Maintain the integrity of blisters to preserve the sterile biological barrier; do not debride or puncture them until a healthcare provider can apply appropriate topical antimicrobials.
- 3. Contraindicated Materials and Infection Control**
- **Avoid Non-Sterile Applications:** Do not apply raw cotton, traditional remedies (e.g., *haldi*/turmeric), pastes, or oils to the wound. These substances introduce contaminants, exacerbate the risk of infection, and complicate subsequent clinical debridement.
 - **Restrict Premature Topical Medications:** Defer the application of topical therapeutic agents or ointments until the patient is formally evaluated within a clinical setting.
 - **Secure Dressing and Transport:** Cover the wound with a clean, non-adherent cloth or sheet to minimize environmental contamination, and immediately transport the patient to an appropriate medical facility for definitive care.

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Conflict of Interest: None

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