

Awareness of Burn First Aid Management among Undergraduate Medical Students at a Medical College Teaching Hospital

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ABSTRACT

Background

First aid training, educational degree of health sector employee is linked to greater levels of knowledge, awareness and positive outcome in burn injury and its management but studies have shown insufficient level of awareness with unsatisfactory skills not only among professional healthcare workers but also in medical students.

Objective

To assess the knowledge and confidence of our medical students towards basic burn first aid and management.

Method

Cross sectional observational study was done using a structured, self-reported 16 multiple choice questionnaire with total marks of 30. Students was graded accordingly: more than 25 points: good, 16-25 points: satisfactory and less than 16 points: poor level of awareness about burn first aid management. Confidence in management of burn related victims, information on receiving of prior formal training in burns and sources of knowledge in students were also evaluated.

Result

Only a satisfactory level of awareness is seen in medical students 62.1%, 98.2% had not received any kind of formal training and the medical college curriculum was the main source of information (69.2%) followed by journals (47.1%) and internet (26%). 78.4% students felt that the curriculum provided to them was inadequate and only 5.3% students were confident in managing burn first aid.

Conclusion

There was inadequacy in the knowledge of burn first aid amongst undergraduate students therefore clinical course in managing burns into the undergraduate curriculum is vital.

KEY WORDS

Awareness, Burns, First aid management, Medical students, Perception

INTRODUCTION

Burns are third most common cause of injury in Nepal followed by fall injuries and road traffic accidents.¹ There is no recent report about the incidence of burn injuries in Nepal, but more than 560,000 Nepalese have sustained a significant burn in their lifetime. Experts believe that the incidence of burn injuries and death rate are far more than estimated.²

Nepal has the highest incidence of burn injury when compared to other parts of the world, with incidence of 2% mainly due to widespread energy poverty, open-fire cooking, communities in cold and high-altitude environments, and inflammable traditional dress.³ Low resource settings contribute to extremely high level of suffering with death rates over seven times higher than Western counterpart.⁴ Therefore proper first aid remains essential in the management of burns as it affects outcome and reduces complications, prevents deterioration and further injury.⁵ Many factors including any prior first aid course or training, and educational degree of health sector employees are linked to greater levels of knowledge, awareness, and positive outcomes of burn injury management. However, studies have shown an insufficient level of awareness with unsatisfactory skills in burn first aid not only among professional healthcare workers but also among medical students.^{6,7}

Aim of this study was to assess knowledge and confidence of our medical students towards basic burn first aid and management. On the basis of our findings, we intended to review our curriculum and provide further training in burn first aid.

METHODS

A cross-sectional observational study was done on July 2023 at Nepal Medical College and Teaching Hospital, Kathmandu using a structured, self-reported questionnaire. Taking a purposive sampling method, the sample size was calculated to be 220.

A structured questionnaire, after thorough research of literature, was formulated which was validated in other studies.⁸⁻¹¹ An array of 16 multiple choice questions evaluating from etiology to management of burns were designed and all correct answers were recorded. A common grading method was used for questionnaires with each variable in part as follows: 1 point was given to each correct option and 0 for the incorrect answer. Some questions had multiple correct options and each option was worth a single mark. The total marks of the 16 questions were 30. The total was calculated and then subjected to analysis. Each participant was then graded according as follows:

> 25 points: good level of awareness about Burn First Aid Management (BFAM)

16-25 points: satisfactory level of awareness about BFAM

< 16 points: poor level of awareness about BFAM

All the students were explained about the study and verbal as well as written consent was taken. Ethical approval was obtained from the institutional research council following which students were asked to fill the questionnaire. No discussion among peers was allowed.

Inclusion criteria:

All the medical students of Nepal Medical College Teaching Hospital in third year, final year and internship.

Exclusion criteria:

Students who did not participate.

Data collected from the online forms was entered in Microsoft Excel and analyzed using IBM- Statistical Package for the Social Sciences (SPSS) version 16.0 respectively. Continuous variables were expressed as the mean value \pm standard deviation (SD) and range, while categorical variables were expressed as proportions. A standard t-test was used to compare the means and the Likert scale was used to assess the confidence values

RESULTS

Total of 227 students took part in the survey. Among them males were 132 (58.1%) and females were 95 (41.9%). There were 75 students studying in 3rd year, 86 in final year and 66 were interns as shown in table 1.

Table 1. Distribution of Participants According to Their Grade of Study

	Number of students N (%)
3 rd year	75 (33.0)
Final year	86 (37.9)
Internship	66 (29.1)
Total	227 (100)

One hundred forty-three students (63.2%) were comfortable using homebased remedies such as Aloe Vera (23.1%). This was followed by toothpaste (7.1%), tomatoes (4.3%), and a combination of all three (14.1%).

The results were satisfactory in 141 (62.1%) of students and poor in 86 (37.9%) of students. The primary source of knowledge for 157 students (69.2%) was the curriculum. Books/journals (47.1%) and internet (26%) were the other important sources.

Fifty-seven students (25.1%) had no confidence in managing the burn first aid. 109 students (48.0%) had doubts and 12 students (5.3%) were confident in successfully administering burn first aid management.

Table 2. Response of Students to the Questionnaire

Question	Correct N (%)	Incorrect N (%)
A burn is classified as minor burn if TBSA affected is?	164 (72.3)	63 (27.7)
A burn is classified as major burn if?	111 (48.8)	116 (51.2)
A burn is classified as superficial if?	153 (67.4)	74 (32.6)
A burn is classified as full thickness if?	155 (68.3)	72 (31.7)
What is the recommended temperature for water to be used for burn wound healing?	48 (21.2)	179 (78.8)
What is the recommended duration for water to be used for burn wound flushing?	54 (23.9)	172 (76.1)
When should a patient visit hospital in case of burn?	26 (11.4)	201 (88.6)
What should be done to prevent hypothermia in burn patients?	31 (13.5)	196 (86.5)
In a hospital, patient affected with burn injury must be examined for which conditions?	39 (17.1)	188 (82.9)
What should be done to prevent hypothermia in burn patients?	87 (38.4)	140 (61.6)
What is the best initial step taken immediately after a burn injury?	71 (31.4)	156 (68.6)
If the person has burn on face, neck region, what should be done?	42 (18.4)	185 (81.6)
How should pain be managed in case of burn?	68 (31.1)	159 (69.9)
If you see a person on fire, what should you do?	97 (42.7)	130 (57.3)

Table 3. Sources of Knowledge in Medical Students

Sources	Frequency N (%)
No knowledge	22 (9.7)
Internet	59 (26)
Television	18 (7.9)
My educational institute	157 (69.2)
Workshop/seminar	3 (1.3)
Peers/colleagues/family member	39 (17.2)
Books/journal	107 (47.1)

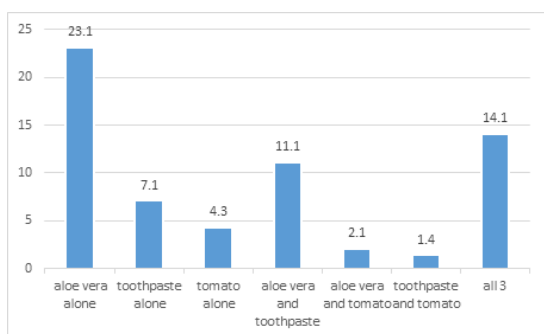


Figure 1. Response of Students to Home-Based Remedies

At the completion of the questionnaire, 178 students (78.4%) responded that their current curriculum was insufficient.

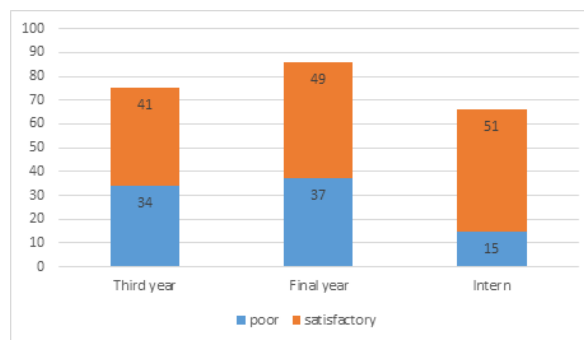


Figure 2. Showing Performance of Students According to Their Study Grade

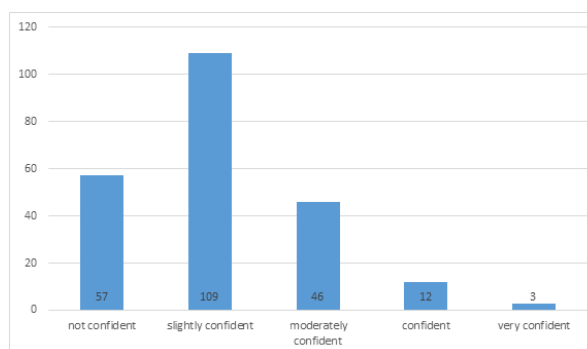


Figure 3. Confidence of Students in Treating Burn Patients

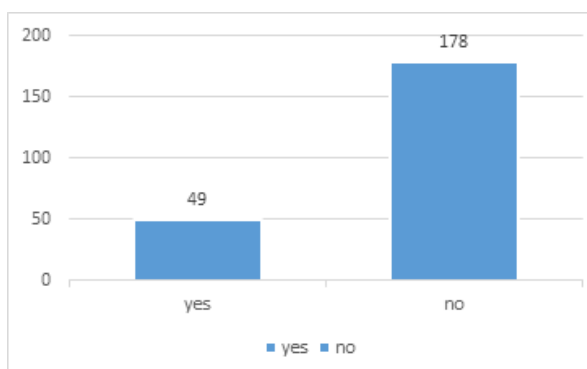


Figure 4. Inadequate Curriculum

DISCUSSION

It is clear that medical students' attitudes toward first aid burn management, who would shortly become healthcare professionals, would ensure the provision of appropriate burn care system management. Medical schools' curricula may provide some instruction on how to handle burn-related injuries in hospital settings with all the resources at hand, but the students' awareness and burn first aid proficiency are lacking.¹²

The current study tends to observe this vital information in medical students studying in one of the major medical colleges in Nepal. Results of this study revealed only a satisfactory level of awareness in medical students (62.1%), with some gaps of knowledge between different years of

students but was comparable. Though our findings are similar to other studies conducted on medical students elsewhere, the mean score was higher than that of medical students of Pakistan (50%) but lower than the study done in Saudi Arabia.^{13,14}

The majority of current participants correctly classified minor, superficial, partial thickness, full thickness, and a fourth-degree burn when it came to burn classification; however, only 48.8% of students correctly classified major burns, pointing out specific gaps in curriculum requirements and the introduction of first aid training courses.

Pouring water or running tap water over the affected area helps to some extent reduce the depth of the burn during the early stages of the burn, but most students couldn't accurately identify the recommended water temperature (78.8%) or the flushing duration (20 minutes, 76.1%). Similar results have been seen in medical students which may be due to lack of knowledge but also inconsistency of different literatures that advise for a wide range of 10-30 min or no significant difference in the outcomes.¹⁵⁻¹⁸

Hypothermia in burns has been associated with increased mortality when adjusting for burn severity and has shown increased early sepsis in pediatric patients with an increase in hospital stay and mortality in adult patients.¹⁹ In our study (61.6%) of students opted for other measures than covering with warm sheets or blankets to prevent hypothermia.

In situations where decision-based action was needed, many students were not able to make correct decisions. When encountering a burning person only (42.7%) answered correctly which was similar to other studies done in Africa, where more than half of them did not know the well-recognized burn messages stop, drop, and roll on catching fire, applying cold water, or removing clothes and accessories.²⁰ But in contrast to a study done in Pakistan, where 82.3% of students knew the correct answer to remove clothes and accessories from burn victims to decrease the entrapment of heat in objects, only 31.4% of our students responded correctly.¹²

Students' knowledge regarding the referral, evaluation, and care of burn patients was found to be lacking in 88.6% of cases. Similarly (81.6%) did not know how to manage facial burns and to look for inhalation injury (82.9%).

The majority of our students (69.9%) thought that using ice or cold compression would be a better way to manage burn pain than over-the-counter painkillers, which could result in more tissue damage and necrosis.²¹

There are reports that applying home-based remedies such as butter, toothpaste, soap, etc. might cause wound contamination, initial injury exacerbation, or mask the depth and severity of the burn by trapping heat within the tissues but (63.2%) of students were comfortable using these home-based remedies. Many research have

reported the use of toothpaste the aloe vera plant, which is widely available and usually present in many households, was chosen by 23.1% of our students to be used in a burn area.²² This was followed by toothpaste (7.1%), tomatoes (4.3%), and a combination of all three (14.1%).

In our study only four students had received previous training on burn first aid while 223 (98.2%) had not received any kind of formal training and the medical college curriculum was the main source of information (69.2%) followed by journals (47.1%) and the internet (26%). This result is consistent with other research that has demonstrated the importance of using local media such as radio, billboards, and television as a source of information to deliver campaigns about appropriate burn first aid measures. These campaigns have been shown to reduce hospitalization and improve the standard of first aid care for burn patients.^{15,23}

A study conducted in Pakistan found that 84% of students realized that first aid training should be included in the curriculum. Having a first aid course early in the medical curriculum program gives students solid foundational knowledge, sufficient practical skills, and confidence in burn management. Upon completing the questionnaire, the majority of our students (78.4%) felt that the curriculum provided to them about burn and management was less.^{16,24,25}

Studies conducted in Pakistan, and Saudi Arabia have shown that as medical students' academic years go on, so does their understanding of first aid for burns.^{15,16} However, in our study assessing students' confidence level in managing burn-related patients, about (25.1%) lacked any type of confidence whereas doubtful confidence (48%) was seen in most of the students. This could be due to higher academic year students taking more training courses, more clinical contact time, and hence a higher likelihood of having contact with burns and helping them to achieve confidence.

The lack of teaching goes hand in hand with the lack of first-aid knowledge and student's confidence in burn management. Based on all of our data, the undergraduate curriculum appears to be seriously lacking. In light of this circumstance, we should arrange the necessary means of conducting first aid instruction sessions for medical science students throughout the academic year.

CONCLUSION

Undergraduate students' general burn first aid knowledge was found to be inadequate in our study. Even where there is some potential for exposure to burns care and education, students felt that they were inadequate. Clinical specialty course in managing burns into the undergraduate curriculum is vital in order for medical undergraduates to learn how to assess and manage burns.

REFERENCES

1. Gupta S, Wong EG, Nepal S, Shrestha S, Kushner AL, Nwomeh BC et al. Injury prevalence and causality in developing nations: Results from a countrywide population-based survey in Nepal. *Surg.* 2015;157(5): 843-9.
2. Tripathi S, Basnet SJ. Epidemiology of burn injuries in Nepal: a systemic review. *Burns Trauma.* 2017;5:10.
3. Li K, Mehta K, Wright A, Lee J, Yadav M, Pham TN, et al. Identifying Hospitals in Nepal for Acute Burn Care and Stabilization Capacity Development: Location-Allocation Modeling for Strategic Service Delivery. *J Burn Care Res.* 2021;42(4): 621-6.
4. Phuyal K, Ogada EA, Bendell R, Price PE, Potokar T. Burns in Nepal: a participatory, community survey of burn cases and knowledge, attitudes and practices to burn care and prevention in three rural municipalities. *BMJ.* 2020; 10 (2): e033071.
5. McLure M, Macneil F, Wood FM, Cuttle L, Eastwood K, Bray J, et al. A Rapid Review of Burns First Aid Guidelines: Is There Consistency Across International Guidelines? *Cureus.* 2021; 13 (6): e15779.
6. Mortada H, Malatani N, Aljaaly H. Knowledge & awareness of burn first aid among health-care workers in Saudi Arabia: Are health-care workers in need for an effective educational program? *J Family Med Prim Care.* 2020;9(8):4259-64.
7. Lemon TI, Stapley S, Idisis A, Green B. Is the current UK undergraduate system providing junior doctors knowledge and confidence to manage burns? A questionnaire-based cohort study. *Burns Trauma.* 2015;3(1):6.
8. World health organization. Preventing injuries and violence prevention: an overview. World health organization 2019; 11. Available from: <https://www.who.int/publications/i/item/9789240047136> Preventing injuries and violence: an overview (who.int)
9. Cuttle L, Kimble RM. First aid treatment of burn injuries. *Wound Pract Res.* 2010; 18: 6-13
10. Kattan AE, Shomer FA, Alhujayra AK, Addar A, Algerian A. Current knowledge of burn injury first aid practices and applied traditional remedies: a nationwide survey. *Burns Trauma.* 2016;4:1-7. doi:10.1186/s41038-016-0063-7
11. Whitaker IS, Shokrollahi K, Dickson WA. Burns (OSH Surgery) Oxford Specialist Handbooks in Surgery. Online edition. Oxford; Oxford University Press. 2019 <https://doi.org/10.1093/med/9780199699537.002.0007>, accessed 6 April, 2023.
12. Mishra SK, Mahmood S, Baig MA. Burn first aid knowledge and its determinants among general population of Rawalpindi. *Eur J Trauma Emerg Surg.* 2019; 45(6) :1121-8.
13. Abbas A, Bukhari SI, Ahmad F. Knowledge of first aid and basic life support amongst medical students: a comparison between trained and un-trained students. *J Pak Med Assoc.* 2011; 61(6): 613-6.
14. Al-Batanony M, Alwutayd O, Balobaid M, Alqaan R, Alselem H, Balabaid W, et al. Medical students perception about burns first aid management: a cross-sectional study. *IJMDC.* 2021:1.
15. Siddiqui A, Qahtani S, Qahtani A, Abdullah S, AlAamri A. Knowledge, Attitudes and Practice of Burns Prevention and First Aid among Medical Students of King Khalid University, Saudi Arabia. *Bangladesh J Med Sci.* 2018; 17: 537.
16. Riaz R, Riaz L, Khan J, Baloch M. Survey on Knowledge of First Aid Management of Burns Amongst Medical and Non-medical Students in Karachi, Pakistan: Need for an Educational Intervention? *Cureus.* 2020; 12(1): e6674.
17. Tan EC, Severien I, Metz JC, Berden HJ, Biert J. First aid and basic life support of junior doctors: A prospective study in Nijmegen, the Netherlands. *Med Teach.* 2006; 28(2): 189-92.
18. Djärv T, Douma M, Palmieri T, Meyran D, Berry D, Kloeck D et al. Duration of cooling with water for thermal burns as a first aid intervention: A systematic review. *Burns.* 2022; 48(2): 251-62.
19. Lukusa MR, Allorto NL, Wall SL. Hypothermia in acutely presenting burn injuries to a regional burn service: The incidence and impact on outcome. *Burns Open.* 2021; 5(1): 39-44.
20. Ibrahim A, Asuku M, Dahiru T. Burn prevention and first aid knowledge: A focus on adolescents in Zaria. *Afr J Trauma.* 2014; 3.
21. Venter TH, Karpelowsky JS, Rode H. Cooling of the burn wound: the ideal temperature of the coolant. *Burns.* 2007; 33(7): 917-22.
22. Kattan AE, AlShomer F, Alhujayri AK, Addar A, Algerian A. Current knowledge of burn injury first aid practices and applied traditional remedies: a nationwide survey. *Burns Trauma.* 2016; 4(1): 37.
23. Schiefer JL, Perbix W, Grigutsch D, Ribitsch B, Fuchs PC, Schulz A. Pre-Hospital Care Of Patients With Severe Burns In Germany: A Review Of 29 Years Of Experience. *Ann Burns Fire Disasters.* 2020;33(4):267-75.
24. Tay PH, Pinder R, Coulson S, Rawlins J. First impressions last. A survey of knowledge of first aid in burn-related injuries amongst hospital workers. *Burns.* 2013; 39(2): 291-9.
25. Das M, Elzubeir M. First aid and basic life support skills training early in the medical curriculum: curriculum issues, outcomes, and confidence of students. *Teach Learn Med.* 2001; 13(4): 240-6.