

Utility of Abbreviated Burn Scoring Index in Predicting Mortality in Burn Patients – Our Experience

Ravi Kumar Chittoria*

Abstract

The prediction of the outcome of patients presenting with severe burns is crucial in guiding clinical judgments. There are multiple models for predicting burn mortality that have been developed over a period of time. Advancements in burn management over the past few decades have led to a remarkable reduction in burn-related morbidity and mortality worldwide. Improvements in critical care, fluid resuscitation protocols, infection control measures, nutritional support, early wound excision and grafting, and intensive care facilities have significantly enhanced the survival outcomes of burn patients. Despite these developments, burn injuries continue to be a major public health concern, particularly in developing countries, where limited healthcare resources, delayed access to specialized burn care, inadequate infrastructure, and lack of awareness contribute to persistently high mortality rates. The disparity in outcomes between developed and developing nations highlights the need for effective tools that can assist clinicians in assessing patient prognosis and optimizing treatment strategies. Several burn severities scoring systems have been developed to predict mortality and evaluate the prognosis of burn patients. These scoring systems help healthcare professionals identify high-risk patients, facilitate clinical decision-making, and improve resource allocation in burn care units. Among these, the Abbreviated Burn Severity Index (ABSI) is a widely recognized and practical tool that incorporates key variables such as age, sex, presence of inhalation injury, depth of burn, and total body surface area (TBSA) affected. Owing to its simplicity and reliability, ABSI has been extensively used in clinical settings to estimate mortality risk in burn victims. In this article, we present our experience with the application of the Abbreviated Burn Severity Index in predicting mortality among burn patients. We evaluate its effectiveness, clinical utility, and predictive accuracy within our patient population and discuss its role as a valuable prognostic tool in the management of burn injuries.

Keyword: Burn injury, burn mortality, abbreviated burn severity index (ABSI), prognostic scoring systems, mortality prediction, total body surface area (TBSA)

INTRODUCTION

Burns injury is one of the important risk factors contributing to mortality in India [1]. Predicting mortality in burn patients at the time of presentation is an important component of burn care, as it helps clinicians assess the severity of injury, estimate prognosis, and plan appropriate treatment strategies. Early recognition of burn patients who are at a greater risk of death allows healthcare providers to initiate prompt treatment, ensure closer monitoring, and optimize the allocation of medical resources. This is especially crucial in settings with limited resources, where access to specialized burn units and intensive care facilities may be restricted.

*Author for Correspondence

Ravi Kumar Chittoria

E-mail: drchittoria@yahoo.com

Professor (Sr Scale), Head, Registrar (Academic), Head of IT Wing & Telemedicine & Associate Dean (Academic), Department of Plastic Surgery, Jawaharlal Institute of Postgraduate Medical Education and Research, Jipmer Campus, Puducherry, India

Received Date: June 18, 2026

Accepted Date: June 23, 2026

Published Date: August 31, 2026

Citation: Ravi Kumar Chittoria. Utility of Abbreviated Burn Scoring Index in Predicting Mortality in Burn Patients – Our Experience . Research & Reviews: Journal of Surgery. 2026; 15(2): 49–53p.

Prognostic scoring systems play a vital role in the objective assessment of burn patients by incorporating clinical parameters such as age, total body surface area (TBSA) burned, depth of burns,

and the presence of inhalational injury. These systems provide a numerical estimate of risk, allowing scientific stratification of patients according to their likelihood of survival. Accurate mortality prediction not only assists in clinical decision-making and patient counselling but also helps healthcare providers prioritize treatment and allocate resources effectively. Furthermore, burn scoring systems are useful for comparing outcomes between different patient populations and assessing the effectiveness of existing and emerging treatment modalities, thereby contributing to improvements in burn care and patient outcomes.

Revised Baux score [2], Abbreviated Burn Scoring Index (ABSI) [3], Ryan et al. [4], Belgium Outcome of Burn Injury (BOBI) [5], Smith et al. [6], McGwin et al. [7] are some of the scoring systems used to predict the burn mortality. There is a need for the most appropriate scoring system which can be used for bedside risk assessment, initial assessment and counselling in burns patients. In this study, ABSI scoring system is used to predict the mortality at presentation as a burn mortality predictor.

MATERIALS AND METHODS

The study was carried out in the burn unit of a tertiary care hospital after obtaining informed patient consent. The first case involved a 27-year-old woman with no significant comorbid conditions who sustained thermal burns affecting the face, neck, and both upper limbs, along with singeing of the nasal hairs suggestive of inhalational injury. Upon arrival at the emergency department, she was conscious and hemodynamically stable, with a pulse rate of 100 beats/min, blood pressure of 100/70 mmHg, respiratory rate of 18 breaths/min, and oxygen saturation of 94%. Initial evaluation revealed approximately 15% superficial second-degree burns and 5% deep second-degree burns. Her admission ABSI score was calculated as 8 (age = 2, sex = 1, inhalational injury = 1, TBSA burned = 3, full-thickness burn = 1), corresponding to an estimated survival probability of 50–70%. The patient underwent tangential excision and application of Integra on the fourth day of hospitalization. Despite treatment, she required endotracheal intubation on the fifth day and subsequently succumbed to her injuries on the sixth day following the burn incident (Figures 1 and 2).



Figure 1. 27-year-old female with 30% burns.



Figure 2. 1-year-old female with 20% thermal burns.

The second case involved a 1-year-old female child with no history of antenatal or perinatal complications and no congenital abnormalities. She presented with scald burns involving the back, buttocks, and genital region. On admission to the emergency department, the child was alert and

clinically stable, with a pulse rate of 117 beats/min, blood pressure of 93/53 mmHg, and oxygen saturation of 100% on room air. Initial assessment revealed approximately 10% superficial partial-thickness burns and 7% full-thickness scald burns. Her ABSI score at presentation was calculated as 5 (age = 1, sex = 1, inhalational injury = 0, TBSA burned = 2, full-thickness burn = 1), corresponding to an estimated survival rate of 80–90%. Wound care was managed with collagen heterografting, and prophylactic antibiotic therapy was initiated. During the course of treatment, the patient developed an infection caused by *Enterococcus faecalis*. Her condition progressively deteriorated, necessitating endotracheal intubation on the fifth day after injury, and she subsequently died on the seventh day following the burn incident (Tables 1 and 2).

Table 1. Abbreviated burn severity index (ABSI) scoring system.

Parameter	Finding	Points
Sex	Female	1
	Male	0
Age (years)	0–20	1
	21–40	2
	41–60	3
	61–80	4
	81–100	5
Inhalation Injury	Yes	1
	No	0
Presence of Full-Thickness Burn	Yes	1
	No	0
Burn Surface Area (BSA) Burned (%)	1–10	1
	11–20	2
	21–30	3
	31–40	4
	41–50	5
	51–60	6
	61–70	7
	71–80	8
	81–90	9
	91–100	10

Table 2. ABSI score interpretation and survival prediction.

ABSI score	Threat to life	Probability of survival (%)
2–3	Very Low	≥99
4–5	Moderate	98
6–7	Moderately Severe	80–90
8–9	Serious	50–70
10–11	Severe	20–40
≥12	Maximum	≤10

RESULTS

The ABSI scoring system was applied to both patients at the time of presentation to predict mortality risk and survival probability. The first patient had an ABSI score of 8, corresponding to a predicted survival rate of 50–70%. Despite appropriate surgical and supportive management, the patient developed respiratory complications and expired on the sixth day after the burn injury.

The second patient had an ABSI score of 5, corresponding to a predicted survival rate of 80–90%. However, the patient subsequently developed *Enterococcus faecalis* infection, leading to clinical deterioration and death on the seventh day following the burn injury.

These findings suggest that ABSI is a useful tool for initial assessment and mortality prediction in burn patients. However, factors – such as infection, sepsis, and other complications arising during hospitalization – may significantly influence the final outcome and should be considered alongside the ABSI score when evaluating prognosis.

DISCUSSION

According to the World Health Organization, approximately 180,000 deaths occur each year as a result of burn injuries, with the majority of these fatalities occurring in low- and middle-income countries where healthcare resources are often inadequate [8]. Despite considerable advances in burn care and management that have improved survival rates, burn-related mortality remains disproportionately high in developing nations due to limitations in infrastructure, specialized care facilities, and access to advanced treatment modalities. Consequently, accurate prediction of patient outcomes is particularly important in these settings, as it assists clinicians in making informed treatment decisions, optimizing resource allocation, and providing appropriate counselling to patients' families [9]. However, most burn mortality prediction models have been developed and validated in high-income countries and are primarily based on populations with different healthcare systems and standards of care. As a result, their predictive accuracy may be reduced when applied to developing countries, where variations in patient demographics, treatment protocols, and resource availability can significantly influence clinical outcomes.

Every year in India, approximately 10,00,000 individuals sustain moderate to severe burn injuries, making burns a major public health concern and a significant contributor to morbidity and mortality [10]. The management of burn patients is highly resource-intensive, requiring specialized burn care units, trained multidisciplinary healthcare professionals, advanced wound care facilities, intensive monitoring, and prolonged hospitalization. However, the availability of dedicated burn intensive care unit (ICU) beds in India remains limited due to the substantial financial burden associated with establishing and maintaining such facilities, as well as the shortage of adequately trained personnel. As a result, healthcare providers often face challenges in prioritizing patient care and allocating scarce resources effectively.

In these circumstances, reliable burn scoring systems and prognostic indices play a critical role in the initial assessment and management of burn patients. Such tools enable clinicians to objectively evaluate burn severity, estimate the probability of survival, identify high-risk patients, and facilitate evidence-based decision-making. Furthermore, prognostic scores assist in triaging patients according to the severity of injury, ensuring that critically ill individuals receive timely intensive care while optimizing the utilization of available resources. Therefore, the use of validated burn mortality prediction models is particularly important in resource-constrained settings, such as India, where efficient allocation of healthcare resources can significantly influence patient outcomes. In the present study, we have applied ABSI score to predict mortality. Mortality prediction models that incorporate established independent risk factors – such as age, total body surface area (TBSA) burned, and inhalational injury – have demonstrated good performance in estimating burn-related mortality across diverse patient populations. Among these models, the Abbreviated Burn Severity Index (ABSI) was selected for the present study because it is simple to calculate at the bedside and has been reported to possess high specificity compared with several other burn mortality prediction tools. In our study, the two patients had ABSI scores of 8 and 5, corresponding to estimated survival probabilities of approximately 50–70% and 80–90%, respectively. Despite these predicted survival rates, both patients ultimately succumbed to their injuries. This discrepancy highlights the presence of additional clinical factors that may have contributed to poor outcomes and underscores the increased mortality risk associated with burn injuries, even in patients with relatively favorable predicted survival according to ABSI scoring.

LIMITATIONS OF THE STUDY

This report is limited by its single-center design and the small number of cases included, which restrict the generalizability of the findings. The observed discrepancy between predicted survival and

actual outcomes highlights the potential variability in the predictive performance of the ABSI score across different clinical settings and patient populations. Therefore, larger multicenter studies with robust methodologies are needed to further evaluate the accuracy and reliability of the ABSI score in predicting mortality among burn patients. Prospective randomized controlled studies involving diverse populations and healthcare settings would provide stronger evidence regarding its clinical utility and applicability in routine burn care practice.

CONCLUSION

The present study suggests that the Abbreviated Burn Severity Index (ABSI) is a simple, rapid, and clinically useful tool for assessing mortality risk in burn patients at the time of presentation. By incorporating key prognostic factors, such as age, total body surface area burned, sex, inhalational injury, and full-thickness burns, the ABSI score provides an objective estimate of patient outcomes and assists clinicians in early risk stratification, treatment planning, and resource allocation. Early identification of high-risk patients can assist clinicians in making informed decisions regarding treatment priorities, intensive monitoring, and allocation of limited healthcare resources. This is particularly important in developing countries, such as India, where burn injuries constitute a significant public health burden and specialized burn care facilities may be limited. ABSI can, therefore, serve as a valuable aid in patient triaging, prognostic counselling, and planning appropriate interventions. However, factors – such as infections, sepsis, variations in healthcare infrastructure, and differences in patient demographics – may influence outcomes beyond those predicted by the score. Hence, further studies involving larger populations are required to validate and standardize the ABSI scoring system according to regional population characteristics and resource availability to improve its predictive accuracy and clinical applicability.

REFERENCES

1. Agarwal P, Sahu S, Ranjan P, Gharpure KJ. A simple mortality prognostic scoring system for burns. *Indian J Burns*. 2017;25(1):26–32.
2. Osler T, Glance LG, Hosmer DW. Simplified estimates of the probability of death after burn injuries: Extending and updating the Baux score. *J Trauma*. 2010;68(3):690–697. doi: [10.1097/TA.0b013e3181c45387](https://doi.org/10.1097/TA.0b013e3181c45387).
3. Tobiasen J, Hiebert JM, Edlich RF. Prediction of burn mortality. *Surg Gynecol Obstet*. 1982;154(5):711–714.
4. Ryan CM, Schoenfeld DA, Thorpe WP, Sheridan RL, Cassem EH, Tompkins RG. Objective estimates of the probability of death from burn injuries. *N Engl J Med*. 1998;338(6):362–366. doi: [10.1056/NEJM199802053380604](https://doi.org/10.1056/NEJM199802053380604).
5. Belgian Outcome in Burn Injury Study Group. Development and validation of a model for prediction of mortality in patients with acute burn injury. *Br J Surg*. 2009;96(1):111–117. doi: [10.1002/bjs.6330](https://doi.org/10.1002/bjs.6330).
6. Smith DL, Cairns BA, Ramadan F, Dalston JS, Fakhry SM, Rutledge R, et al. Effect of inhalation injury, burn size, and age on mortality: A study of 1447 consecutive burn patients. *J Trauma*. 1994;37(4):655–659. doi: [10.1097/00005373-199410000-00021](https://doi.org/10.1097/00005373-199410000-00021).
7. McGwin G Jr, George RL, Cross JM, Rue LW III. Improving the ability to predict mortality among burn patients. *Burns*. 2008;34(3):320–327. doi: [10.1016/j.burns.2007.07.016](https://doi.org/10.1016/j.burns.2007.07.016).
8. Brusselselaers N, Monstrey S, Vogelaers D, Hoste E, Blot S. Severe burn injury in Europe: A systematic review of the incidence, etiology, morbidity and mortality. *Crit Care*. 2010;14(5). doi: [10.1186/cc9300](https://doi.org/10.1186/cc9300).
9. Noor DM, Wicaksana A, Fauzi AR, Wardhana A, Prasetyono TOH. Comparison between revised Baux score and abbreviated burn severity index as a predictor of mortality in burn patients at a tertiary care center in Yogyakarta, Indonesia. *Eur J Plast Surg*. 2020;43(1):53–58. doi: [10.1007/s00238-019-01578-y](https://doi.org/10.1007/s00238-019-01578-y).
10. Brusselselaers N, Monstrey S, Vogelaers D, Hoste E, Blot S. Severe burn injury in Europe: A systematic review of the incidence, etiology, morbidity and mortality. *Crit Care*. 2010;14(5). doi: [10.1186/cc9300](https://doi.org/10.1186/cc9300).