Economic burden of treatment of acute burn : Systematic Review

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ABSTRACT

Burn injuries impose a significant financial burden on healthcare systems globally, with acute burn care costs rising steadily over the past decade. This review explores the trends in the cost of acute burn care from 2008 to 2023, focusing on key cost drivers such as hospitalization, ICU care, surgical interventions, pharmaceuticals, and rehabilitation services. In high-income countries like the United States, advancements in medical technologies and the increased use of specialized care have contributed to rising expenses, with the cost of treating severe burns reaching $300,000 to $500,000 per patient by 2023. In contrast, burn care costs remain lower but often inadequate in low- and middle-income countries, where limited access to advanced treatments results in higher mortality rates. The review also highlights factors driving cost increases, including prolonged ICU stays, the introduction of bioengineered skin substitutes, rising pharmaceutical prices, and the growing emphasis on long-term rehabilitation. Strategies to mitigate these rising costs include prevention programs, telemedicine, early excision and grafting, and the use of multidisciplinary care teams. The review concludes by emphasizing the need for cost-efficient interventions and improved access to quality care in underserved regions.

Keyword: - *Burn care costs, acute burn care, hospitalization, ICU, skin grafting, bioengineered skin substitutes, pharmaceutical costs, rehabilitation, regional cost variations, prevention strategies, telemedicine, healthcare economics, burn injuries*

1. Introduction

Burn injuries are a major cause of morbidity and mortality worldwide, posing significant physical, psychological, and financial challenges for affected individuals. Acute burn care, which encompasses immediate and specialized medical interventions, has seen significant advancements in the past decade. However, the financial burden of treating burn injuries has grown considerably due to the increasing costs of hospitalizations, surgical procedures, medications, and rehabilitation services. [1]

This review aims to explore the cost trends in acute burn care over the past 10 years, providing an analysis of the factors driving these costs, regional variations, and strategies to optimize cost-efficiency. References to key studies and data from multiple countries will be used to support these findings.

Burn injuries vary widely in severity, ranging from superficial burns requiring minimal treatment to severe burns involving a large percentage of the total body surface area (TBSA) that necessitate extensive medical care. Acute burn care typically includes emergency resuscitation, wound management, surgical intervention, and rehabilitation. The costs associated with this care are influenced by several factors, including burn size, depth, location, patient age, comorbidities, and the need for specialized services such as those provided in burn units.[2]

According to the World Health Organization (WHO), an estimated 180,000 deaths occur annually due to burns, with a higher prevalence in low- and middle-income countries. [2] In high-income countries like the United States, advanced medical interventions have resulted in improved survival rates for patients with severe burns, but these advancements have also contributed to rising healthcare costs.[3]

Costs for burns vary widely but tend towards being generally expensive with a 2014 systematic review finding a mean total healthcare cost per burn patient of US$ 88 218 (range US$ 704–717 306). [1]

2 Methodology

Search strategy Searches of eligible studies were conducted in Medline (PubMed) and EMBASE. The search terms used in Medline included burns (MesH Terms), burn* (Title/Abstract), scald* (Title/Abstract), thermal NEXT injury* (Title/Abstract), cost and cost analysis (MesH Terms), and cost* (Title/Abstract). The search terms used for EMBASE were burn*, scald*, and cost* or cost allocation*. Reference lists of included articles (published from 2008 to 2023) were screened for relevant articles.

Selection criteria

The included studies met the following criteria:

• Burn care cost studies or economic evaluation studies in which costs per patient were reported in the methods or results section

• Empirical studies in all market economies that were published in international peer-reviewed journals during the period from January 2008 to December 2023

• Studies published in English

Cost or economic evaluation studies on burn care that had been published in international peer-reviewed journals from January 2008 to May 2023 were identified. The methodology of these articles was critically appraised by single reviewer, and cost results were extracted.

Literature search The Medline search yielded 1,072 articles and 70 additional articles were found in Embase. Finally, two articles were retrieved by manual searching for a total of 1,076 unique articles. Title screening resulted in the selection of 164 articles that appeared to meet all of the selection criteria. In the second phase, abstract screening resulted in the exclusion of 12 articles. Of the remaining 152 articles, 102 did not meet the inclusion criteria after the papers had been fully read; thus, the final sample includes 50 articles. Three full texts could not be retrieved. The main reasons for exclusion were failure to address burn care or burn patients and the absence of a description of the study's cost calculations in the methods or results.

3. Results

Over the last decade, the cost of acute burn care has escalated significantly in many countries. Studies from the United States, Europe, and other regions provide insight into the drivers of this cost increase. Hospitalization costs are a significant component of acute burn care, especially for patients with large burns who require prolonged stays in specialized burn units or intensive care units (ICUs). ICU care is particularly expensive, with costs ranging from $2,500 to $5,000 per day in high-income countries like the United States. [4] Studies indicate that the average length of hospital stay for severe burn patients is approximately one day per percentage TBSA burned, meaning that patients with extensive burns may require several weeks or months of hospitalization.[5] In 2013, the cost of treating a patient with severe burns (more than 40% TBSA) in a U.S. burn center was estimated at $200,000 to $300,000.[6] By 2023, these costs had risen to $300,000 to $500,000, primarily driven by the increasing cost of ICU services, advanced wound care products, and the need for multiple surgical interventions.[7] Surgical procedures, particularly skin grafting and reconstruction, are critical components of acute burn care. Burn patients often require multiple surgeries to remove dead tissue (debridement) and replace it with grafts. The cost of a single skin grafting procedure can range from $10,000 to $40,000 depending on the extent of the burn, the type of graft used, and the complexity of the surgery.[8]

Over the past decade, advancements in bioengineered skin substitutes, such as Integra® and AlloDerm®, have improved outcomes for burn patients. However, these products are expensive, with costs for bioengineered skin substitutes ranging from $1,000 to $2,000 per square foot.[9] The cumulative cost of multiple surgeries and the use of advanced grafting materials has contributed to the overall rise in burn care expenses.

Pharmaceutical costs are another major driver of the rising cost of acute burn care. Burn patients require a range of medications, including antibiotics to prevent infection, pain management drugs, and topical agents to promote healing. According to a study by de Oliveira et al. (2016), medication expenses accounted for a significant portion of the total cost of burn care, with antibiotic-resistant infections further increasing costs.[10]

Between 2008 and 2023, the cost of pharmaceuticals used in burn care increased by approximately 20-30% due to inflation, supply chain disruptions, and the development of new, more expensive drugs.[4] Additionally, the rise of antibiotic-resistant bacteria has led to increased use of more costly second- and third-line antibiotics.[11]

Rehabilitation is essential for burn patients to regain mobility and function and to prevent complications such as contractures and scarring. Physical therapy, occupational therapy, and psychological support are critical aspects of burn rehabilitation. The cost of rehabilitation services has increased significantly over the past decade, with long-term care often exceeding the cost of initial hospitalization. According to Kornhaber et al. (2018), rehabilitation costs can range from $50,000 to $100,000 for severe burn patients, depending on the duration and intensity of therapy.[12] The growing recognition of the importance of psychological support for burn patients has also

contributed to rising costs, as mental health services are increasingly integrated into burn rehabilitation programs.[13] In the United States, the cost of acute burn care is among the highest globally due to the widespread use of advanced medical technologies, specialized burn units, and high labor costs. According to Lee et al. (2022), the total annual cost of burn care in the U.S. exceeded $10 billion by 2020, with a significant portion of this cost attributable to hospitalization, surgeries, and pharmaceuticals.[7] Similarly, in Europe, burn care costs have increased steadily over the past decade. A study conducted in the United Kingdom by Guest et al. (2017) found that the average cost of treating a burn patient in a specialized burn center was approximately £50,000 to £70,000 in 2017, with costs continuing to rise due to inflation and increased demand for specialized services.[14] In contrast, the cost of burn care in low- and middle-income countries (LMICs) is significantly lower but often reflects suboptimal care. Limited access to specialized burn centers, advanced medical technologies, and trained healthcare providers contributes to poorer outcomes for burn patients in these regions. For example, a study conducted in India found that the average cost of treating a burn patient was $2,000 to $5,000, but the quality of care was often inadequate, leading to higher mortality rates and longer recovery times.[15]
Sanchez et al (2008) found annual cost of treatment of burn was USD 99,773 compared to USD 13,823 needed for care of HIV/AIDS and USD 13,826 need for care of surviving stroke victims in first year.[16] George et al (2016) stated severe trauma in UK cost up to USD 55,200.39, colorectal cancer with surgery, chemo and radiotherapy including inpatient and outpatient cost approximately USD 84,114.88 and cost of treatment in general intensive care in UK cost USD 2,234.30 compared to USD 3,942.88 in burn critical care.[17] Hop et al (2014) explained cost of burn care has increased over the years, in US cost of burn per day was USD 2,000 in 1980s, which increased to USD 5,000 in 2000s. In the US Mean cost of burn care in per day in general hospital was USD 1,159, ranging from USD 25 - USD 4,314 and cost in intensive care unit in a general hospital was USD 4,356 a day, mean cost of burn center per day was USD 2,705 (range of USD 111– USD 11,607), while in general hospital was USD 1,959(USD 585–USD 4,314). Similarly, Wheeler et al found cost in burn center was USD 1,485 and general hospital was USD 585 per day, mean cost per burn patient ranged from USD 102 to USD 717,206 with mean of USD 76,497 and median of USD 36,696.68 Mean cost also varies according to income of countries, most of the studies done in high-income countries, there are only few costs related studies done in low-income countries. Hop et al (2014) explains that in high income countries total health care cost per burn patient ranged from USD 704 to USD 717,306 with mean of USD 88,218 and median of USD 44,024 while in low- and middle-income countries the total healthcare cost per burn patient ranged from USD 102 to USD 15,555 with mean of USD 5,196 and median of USD 3,559.[18]

There are many cost driver in burn care, patients age, sex, cause of burn, extend of burn, cost of hospitalization, multiple surgeries, frequency and large dressings, medications, dressing material, human resources that adds up to total cost.

3.1 Age
Hop et al (2014) reported treatment of adults cost more than children and adolescents in Netherland.[19] Ter meulen et al (2016) reported in study including 884 patients in South Africa that cost of burn increased as age of the patient increased.[20] However, Kai-yang et al studied 178 pediatric group of patients in 2009 of burn injury cases where scald burn was most common cause of burn injury reported that cost burn care of among age group was not significant between the age groups within pediatric group.[21] Haikonen et al reported in 2014 that difference between mean total cost between age group less than 60 and more than 60 was not significant but cost per percent TBSA differed significantly costing USD 2,954 vs. USD 6,264.[22]

3.2 Gender
Ter Meulen et al in 2016 reported burn treatment in female group of patients cost more than male group in pediatric burn injury.70 Latifi et al in 2017 studying cost burn care in 1425 patients in Iran reported mean cost per male was USD 629.3 more than mean total cost of female patients.73 Kai-Yang et al in 2009 reported there was no significant difference in median cost per case between the sex-group in China.[21]

3.3 Cause
Hop et al in 2014 explained that cost of flame burn was more expensive than other cause of burn. Total health care of flame burn to be more expensive costing USD 87,139 per patient than electric burn USD 55,281 and scald burn USD 33,960.[18] Ter Meulen et al (2016) reported in study included pediatric patients in South Africa with mean burn size treated 8% TBSA, flame burn injuries required mean 2.1 procedures per patient compared to scald 0.4 and flame burn injury cost mean USD 3,044, scald USD 945 and other USD 698, flame burn cost significantly more than burn injury by other causes.[20] Anami et al (2017) explained that thermal burn from fire was the most expense

with mean daily cost of USD 912.59 and mean cost of USD 41,572.32 while chemical burn was lowest with mean daily cost of USD 912.59 and mean total cost of USD 21,304.25 in Australia.[24] As well as Koljonen et al (2013) demonstrated in 107patients in Finland that treatment of flame burns and contact burn was more expensive compared to other causes of burn, USD 61,907 vs. USD 45,937 during the inpatient treatment as well as outpatient visit and procedure with cost USD 1880 vs USD622 and USD 5706 vs. USD 1043 respectively.[25]

Hop et al (2014) reported higher TBSA burned was associated with increased costs but no further increase above 80%.[18] Latifi et al (2017) studied cost of economic burden in burn injuries in 1425 patients in whom flame burn was the most common cause, and TBSA had positive effect in cost of treatment, each percentage of TBSA had USD 81 increase in cost of hospital.[23] Similarly, Jeevan et al (2014) reported in 262 patients, mean cost of major burn, third degree or more than 19% TBSA or affecting multiple body regions without significant graft was USD 4594, with graft was USD 29,613.[26] Burn with multiple significant graft procedures without major comorbid condition or complication was less expensive USD 12,202 and burn with major comorbid condition and complication to be USD 16,586 in UK.[25] Anami et al (2017) mentioned that in study which included 180 burn patients in brazil, increase in cost with increase in burned area starting from 20% above, highest spent on 51-60% TBSA burn and also with highest median length of stay mean daily cost was USD 1330.48, mean hospitalization cost was USD 39,594. The mean daily cost in non-surviving patient was more than the surviving patients USD 1866 vs. USD 1012.[24] Ter Meulen et al (2016) reported in study conducted in South Africa that % TBSA burn had positive effect on cost of treatment in pediatric group of patients, cost of treatment increased with severity which increased exponentially for burn >25% TBSA.[20] Klein et al (2008) studied 654 burn cases in pediatric age group where majority of patients were male and majority scald burn. Mean hospital cost in minor burn cost USD 9026 with median USD 2138 while for major burn mean hospital cost was USD 63,806. Cost per percentage USD 2639. Cost of treatment depended on TBSA burn and area grafted.[27] Haikonen et al reported in 2014 reported mean inpatient stay per %TBSA was 2.7 days and median number of days per percent was 1.6 days, cost per %TBSA was USD 3,409 and cost increased with increase in TBSA and exponentially for burn more than 50% TBSA with mean median cost per %TBSA being USD 5,567 in Finland. Kai-Yang et al (2009) studied pediatric burn in China where most common cause was scalding affecting more boys with mean 8% TBSA. Second degree burn had lower median cost per than second and third degree burn group USD 719.77 vs. USD 1,331.64. Second-degree burn had relatively higher length of stay compared to combined second and third degree burn (12 vs. 24 days), depth of burn was most imported factor that affected length of stay in hospital which was most important factor for direct hospitalization cost.[21] Torrati et al (2000) studied cost of dressing using occlusive dressing in 82 patients and found cost of material directly related to percentage of body affected by burn however there was no significant difference in cost of dressing material between dressing of second degree burn, dressing of third-degree burn and combination of second and third degree burns.[28] Mean cost of second-degree burn was USD 64.87, third degree burn USD 42.23, second and third degree combined USD 62.63.[27] Koc et al reported that cost of treating first-degree burn was USD 4,055, second-degree burn USD 5,516.43 and third degree burn USD 40,591, with no significant difference between second and third-degree burn.[29]

3.4 Hospital cost:

Gallaher et al (2015) studied cost of burn in 905 patients in Malawi, where mean age of burn patient was 3 years, TBSA burn 17.9%, length of stay was 23.1 days and most were male (55%) and reported largest component of cost was hospitalization accounting for 30%. [30] However, Ter Meulen et al (2016) reported hospitalization cost constituted of 62% of total cost for burn care in pediatric group of burn patients in South Africa.[20] Similarly, Latifi et al (2017) studies cost of economical burden in burn injuries in 1,425 patients with burn injury and reported 66.27% of total cost was hospital charge.[23]

Intensive care unit

George et al (2016) studied cost of burn patients treated in Intensive care unit which showed mean intensive care unit stay was cost USD 4,028 per day which is higher than treating patients in general intensive care unit in UK in region of USD 2,187, mean theatre cost was USD 118,296.[31] Cost of critical care was USD 289,871 per patient and considerably higher than those not receiving critical care was 6,101. The cost of treating burn patients is significantly more than treating severe trauma with highest associated injury score at USD 54,036 and with colorectal cancer over their life time at 82,341.[30] Jeevan et al (2014), treatment in Intensive care unit per day was USD 2,032 and stay in HDU per day was USD 753.[26] Patlil et al (2009) compared Intensive care unit associated costs of burn patients with non burn patients and found total daily cost did not differ in medications, fluids and laboratory test but cost of radiological investigation, physiotherapy and wound dressing was higher in burn group of patients.[32]

3.5 Investigation

Ahuja et al (2013) stated that investigation charges consisted of 11.56% of total cost of burn care. Patient needed 41 investigations per patient at total cost of USD 97,704.44. The most frequent investigation were blood biochemistry (77.98% of cost) followed by hemogram, which consisted of 19.8% of cost and microbiology, which consisted of 1.82% of cost. Mean cost of investigation per patient was USD 122.59.[16] Gallaher et al (2015) reported total cost on investigation for burn unit was USD 340.19 in developing country Malawi, which amounts to 9.1% of total cost with blood and blood product added to it .[30]
Patil et al (2009) studied cost of burn in intensive care unit in Australia, laboratory cost consisted of 31% of total cost which was higher than non-burn group (27%) included within the study.[32]

3.6 Blood products and transfusion

Patil et al (2009) reported that cost of blood and blood products were higher in burn patients compared to non-burn patients treated in intensive care unit in Australia.[32] Kai-Yang et al (2009) reported that burn patients with no blood transfusion sustained lower cost per case median USD 730 than those requiring blood transfusion USD 3,546 which can also be because of less severity of injury.[21] Koc et al (2012) reported that Blood and blood products consisted of second most contributing factor in total drug expenditure during treatment of burn with mean cost per patient USD 79.67.[28] Ahuja et al (2013) explained 147 of 797 patients in the study-received transfusion with 322 units of blood with average cost of blood product per patient were USD 9.47.[16] Gallaher et al (2015) reported that the burn unit spent on an average USD 123.75 per month on blood transfusions, with cost of investigation added to it, amounts to 9.1% of total cost.[30]

3.7 Medications

Patil et al (2009) studied cost of burn in intensive care unit in Australia which showed cost of medication constituted of 25% of total cost, the cost of analgesic, anxiolytic and sedative medications was USD 15.49 which is higher in burn patients compared non burn patient treated in intensive care unit. The cost of fluids and antibiotics was similar in both burn and non-burn group of patient included in the study.[21] Cornish et al (2003) reported mean cost of drugs per Mean drug cost per patient was USD 13.83 per day and USD 596.19 for each admission.[33] Cost for high-risk patient was USD 80.06 per day, for moderate risk group average daily cost was USD 35.34 and for patients with minor mortality risk was USD 5.71. 50.9% were spent on analgesics and sedatives followed by anti-infective agents 23%.[32] Gallaher et al (2015) studied cost of burn in 905 patients in Malawi, where cost of medication was 17.5% of total cost of which 54.7% was spent on analgesics followed by 35.1% on antibiotics and intravenous fluids (7.8%) .[30] Ogudndipe et al (2009) studied cost of burn in 69 patients in Nigeria where mean cost of drug per patient was USD 91.21 and 84% was spent on antibiotics.[34] Koc et al (2012) studied 241 burn injury cases in Turkey with mean TBSA burn was 15.8%, mean cost of drugs per patient was USD 329.63 with range of USD 1.38 to USD 14,159. Antibiotics represented vast majority of burn related drug cost with mean USD 22.26.[29] Bass et al (2008) studies impact on cost of use of CEA in burn injuries in 20 patients in USA. Cost of patients treated with CEA was USD 304,000 mean USD 31000 and length of stay was 128, needed more surgeries but better scar and skin pigmentation. Cost of non-CEA was USD 178,000 and stayed 89 days in hospital.[35] Hop et al (2014) studied use of skin substitutes in Netherlands in 86 patients which stated higher equipment cost in use of topical negative pressure therapy compared to dermal substitutes and use of topical negative pressure and dermal substitute constituted 7% total cost of burn care.[36] Ahuja et al (2013) reported that cost of antibiotics consisted of 4% of total expenditure for burn care in India.[16]

3.8 Dressing changes

Patil et al (2009) studied cost of burn in intensive care unit in Australia and found wound dressing was expensive in burn group of patients compared to non burn group.[32] Ahuja et al (2013) studied 797 burn case and found cost of dressing changes constituted of 8.24% of total cost of burn care in India.[16] Torrati et al (2000) studied cost of dressing using occlusive dressing in 82 patients and found cost of material directly related to percentage of body affected by burn and number of staff involved in the dressings[28] Ter Meulen et al (2016) reported that cost of treatment increased with severity, age and in female patients which increases exponentially for burn >25% TBSA and cost of dressing in burn unit per percent of TBSA was USD 31.53 and USD 43.47 per percent in operating

room. Mean cost per patient for dressing change was USD 135.85. Flame burn patients required greater mean total number of dressing changes than scald burn.[20]

3.9 Cost of surgical procedure

Gallaher et al (2015) reported operative cost comprised of 11.4% of cost of burn care. Burn debridement and grafting cost comprised of 83% of operative cost with salary of anesthetist comprised of 17%. Mean cost in operated cases were USD 1,108.67 and those managed non-operatively was USD 308.[30] Jeevan et al (2014) reported in 262 patients, mean cost major burn, third degree or more than 19% TBSA or affecting multiple body regions without significant graft was USD 4,590.54, with graft USD 29,606, burn with multiple significant graft procedures without major comorbid condition or complication USD 12,199, burn with major comorbid condition and complication to be USD 16,582, mean cost per patient was USD 6,864, stay in per day was USD 2,032, in wards USD 731, burn theater per hour was USD 673 in UK.[26] Ter Meulen et al (2016) reported that cost of surgery constituted of 21 % of total cost for burn care, which was the second highest contributing factor after hospitalization. Flame burn required multiple procedures compared to other causes of burn in children, 2.1 vs. 0.4. Mean cost of treatment in patients under going surgical procedure was USD 2,219.13 compared to USD 472.40 who were treated non operatively.[20]

3.10 Mean cost

Mean cost varies according to regions which as been summarized in Table 1,2 and 3

Author	Country	Year	Mean Cost in USD
Latifi[23]	Iran	2017	2766
Anami[24]	Brazil	2017	39594
Ter Meulen[20]	South Africa	2016	1102
George[31]	UK	2016	97617
Gallaher[30]	Malawi	2015	559
Hop[19]	Netherlands	2014	27543
Koljonen[25]	Finland	2013	73569
Jansen[37]	Canada	2012	55,030
Carey[38]	USA	2012	68951
Ahn[2]	Australia	2012	73532
Carayanni [40]	Greece	2011	704
Lotter[41]	Spain	2011	16312
Lotter[41]	Germany	2011	23793
Lotter[41]	Austria	2011	23949
Lotter[41]	Italy	2011	25886
Patil[32]	Australia	2010	10427
Strand[42]	Sweden	2010	11266
Kastenmeier[43]	USA	2010	48823
Kai-Yang[21]	China	2009	7814
Santos[44]	Portugal	2009	11731
Onarheim[45]	Norway	2009	11731
Hemington-Gorse[46]	Welsh	2009	44036
Mashreky[47]	Bangladesh	2008	217

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Table 1: Summary of mean cost per patient

Author	Country	Year	Mean Cost per day in USD
Anami[24]	Brazil	2017	1,330
Gallaher[30]	Malawi	2015	24
Jeevan[26]	UK	2014	19,554
Ahuja49	India	2013	135
Ahn[2]	Australia	2012	3,677
Berger[48]	Switzerland	2010	2,575

Table 2: Summary of mean cost per day

Author	Country	Year	Cost per % TBSA in USD
Ahn[2]	Australia	2012	6,263
Latifi [23]	Iran	2017	81.3
Klein [27]	USA	2008	2639

Table 3: Summary of mean cost per percentage of TBSA per patient

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4. Discussion

Despite lower costs, the burden of burn injuries is disproportionately higher in LMICs due to the prevalence of risk factors such as open-flame cooking, unsafe housing, and industrial accidents. Efforts to improve burn care in these regions, including investment in infrastructure and training, are essential to reducing mortality and improving outcomes.

The rising cost of acute burn care can be attributed to several interrelated factors:

Advancements in Medical Technology: While new technologies such as bioengineered skin substitutes and vacuum-assisted wound closure have improved patient outcomes, they are also expensive. The widespread adoption of these technologies in high-income countries has contributed to the overall rise in burn care costs.[9]

Increased Hospitalization and ICU Stays: The prolonged hospitalization of burn patients, particularly in ICUs, has significantly increased the cost of care. As survival rates for severe burns have improved, patients require longer hospital stays and more intensive care to manage complications such as infections and respiratory failure.[4]

Pharmaceutical Inflation: The rising cost of medications, particularly antibiotics and pain management drugs, has further added to the financial burden of burn care. The increasing prevalence of antibiotic-resistant infections has also driven up the cost of treatment.[11]

Rehabilitation and Post-Acute Care: The recognition of the importance of comprehensive rehabilitation for burn patients has led to increased investment in long-term care services. While these services are essential for improving functional outcomes, they have contributed to the overall rise in burn care expenses.[12]

Given the rising cost of acute burn care, healthcare providers and policymakers have explored several strategies to improve cost-efficiency while maintaining high standards of care. One of the most effective ways to reduce the financial burden of burn care is through prevention. Public health campaigns focused on fire safety, industrial regulations, and safe cooking practices have been successful in reducing the incidence of burn injuries in many countries. For example, a study by Ahn et al. (2019) found that implementing fire safety regulations in South Korea led to a 15% reduction in burn-related hospitalizations over five years, resulting in significant cost savings.[2]

The use of telemedicine has shown promise in reducing the cost of acute burn care, particularly in rural and underserved areas. By allowing burn specialists to remotely assess and monitor patients, telemedicine can reduce the need for expensive hospital transfers and in-person consultations (Bardazzi et al., 2020). A study in Australia found that telemedicine consultations for burn patients reduced hospital admissions by 20%, resulting in substantial cost savings (Smith et al., 2020).[49]

Early excision and grafting of burn wounds have been shown to reduce the length of hospital stays and improve patient outcomes. By removing dead tissue and applying skin grafts within the first few days of injury, healthcare providers can prevent complications such as infections and sepsis, reducing the need for prolonged ICU care.[5]
The use of multidisciplinary care teams has been shown to improve the efficiency of burn care by reducing the duplication of services and improving coordination among healthcare providers. These teams, which include surgeons, nurses, physical therapists, and psychologists, work together to develop comprehensive care plans that address the physical and psychological needs of burn patients.[3]

4. CONCLUSIONS

The cost of acute burn care has risen significantly over the past decade, driven by advancements in medical technology, prolonged hospitalizations, increasing pharmaceutical costs, and the growing emphasis on rehabilitation. While these developments have improved patient outcomes, they have also placed a considerable financial burden on healthcare systems, particularly in high-income countries.
Efforts to reduce the cost of burn care should focus on prevention, early intervention, and the use of cost-effective technologies. Telemedicine, multidisciplinary care teams, and early excision and grafting are promising strategies that have been shown to improve outcomes and reduce costs. Furthermore, addressing the disparities in burn care between high-income and low- and middle-income countries is essential to ensure that all burn patients receive the care they need, regardless of their geographic location or economic status.
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BIOGRAPHIES (Not Essential)

Author Photo-1 	Dr. Piyush Giri is a highly skilled Burn, Plastic, and Reconstructive Microsurgeon with extensive experience in treating severe burn injuries, complex wound care, and intricate reconstructive procedures. After earning their medical degree from College of Physicians and Surgeons, Dr. Piyush completed specialized training in plastic and reconstructive surgery, followed by a fellowship in microsurgery. Known for their meticulous surgical technique and compassionate patient care, Dr. Piyush has significantly improved the quality of life for countless patients, restoring both function and aesthetics. They are also an active contributor to medical research and education, committed to advancing the field of reconstructive microsurgery.