Journal of
Babol University of Medical Sciences
JBUMS
e-ISSN: 2251-7170 p-ISSN: 1561-4107

An Investigation into the Causes of Burn Injuries among Patients Admitted to Ayatollah Taleghani Teaching Hospital in Ahvaz

A. Mohajarian (MD)[1], M. Poladzadeh (MD)[1], A. Rafati Navaei (MD)[*1], S. Hesam (PhD)[2], F. Farhadi (MD)[3]

1.Department of Emergency Medicine, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, I.R.Iran.
2.Department of Biostatistics and Epidemiology, School of Public Health, Ahvaz Jundishapour University of Medical Sciences, Ahvaz, I.R.Iran.
3.Clinical Research Development Unit, Golestan Hospital, Ahvaz Jundishapour University of Medical Sciences, Ahvaz, I.R.Iran.

•**Corresponding Author: A. Rafati Navaei (MD)**
Address: Department of Emergency Medicine, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, I.R.Iran.
Tel: +98 (61) 33116515. **E-mail:** ali_rafaty@yahoo.com

Article Type
Research Paper

Received:
May 9th 2025
Revised:
Jun 28th 2025
Accepted:
Jul 15th 2025

ABSTRACT

Background and Objective: Burn injuries represent a significant category of physical trauma that can lead to both localized tissue damage and systemic complications. Given the prognostic value of determining the underlying cause of burns, the present study was designed to explore different causes of burns in patients admitted to Ayatollah Taleghani Hospital in Ahvaz.

Methods: In this cross-sectional study, the medical records of 812 patients admitted with burn injuries to Ayatollah Taleghani Hospital, Ahvaz, during the year 2023 were reviewed. Data on patient demographics, including age and gender, as well as burn-related characteristics such as type, degree, extent of injury, and clinical outcomes, were collected using a standardized checklist and subsequently analyzed.

Findings: The mean age of the patients was 30.71±17.75 years. Of the total patient population, 45.6% were female and 54.4% were male. In terms of burn severity, 65.3% of patients had third-degree burns. The most frequently observed burn extent was in the 10-20% range, accounting for 27.8% of cases, and thermal burns comprised the majority, with a frequency of 88.5%. Ultimately, 68.8% of patients were discharged, while 18.1% succumbed to their injuries. Burns from hot rice water (156 cases, 19.2%) and gasoline burns (143 cases, 17.6%) were the most common etiologies, followed by gas-related burns (131 cases, 16.1%). Other causes included electrical burns (7.6%), paint thinner burns (9.9%), and pressure cooker explosion burns (5.5%). All patients with burns from hot rice water (19.2%), boiling water (3.6%), fire (3.6%), and electric heaters (5.0%) were discharged.

Conclusion: The findings of this study demonstrated that patients whose burns were caused by gasoline experienced the highest rate of death among all groups. In contrast, patients presenting with burns from hot rice water had the highest rate of successful discharge from the hospital. These data underscore the critical prognostic value of both the causative agent and the extent of tissue damage.

Keywords: *Degree of Burn, Rate of Discharge, Burn-Related Injuries.*

Cite this article: Mohajarian A, Poladzadeh M, Rafati Navaei A, Hesam S, Farhadi F. An Investigation into the Causes of Burn Injuries among Patients Admitted to Ayatollah Taleghani Teaching Hospital in Ahvaz. *Journal of Babol University of Medical Sciences*. 2026; 28: e29.

Copyright © 2024 Babol University of Medical Sciences. Published by Babol University of Medical Sciences. This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International license (https://creativecommons.org/licenses/by-nc/4.0/). Noncommercial uses of the work are permitted, provided the original work is properly cited.

Introduction

Burns are defined as injuries in which the skin is destroyed by various agents such as heat, cold, electricity, and others (1). Burns are recognized as one of the serious injuries and, after traffic accidents, falls, and interpersonal violence, are the fourth most common cause of injury worldwide (2). Evidence indicates that burns account for 5-12% of all traumas globally (3). According to the World Health Organization report in 2018, 180,000 deaths occur annually due to burns, predominantly in third-world and less-developed countries (4). In Iran, burns rank thirteenth among the annual burden of diseases, and among the top 20 diseases with the highest mortality and disability rates, burns rank eleventh in men and tenth in women (5). Burns are classified into four degrees based on depth (6). First-degree burns, such as sunburn, are superficial, red, and painful injuries that affect only the epidermis and typically heal completely without requiring specific intervention. Second-degree burns penetrate the dermis and are therefore termed partial-thickness burns. These are subdivided into superficial partial-thickness (SPT) burns, which damage the epidermis and part of the dermis, and deep partial-thickness (DPT) burns, which extend deeper into the dermis (7). Third-degree burns destroy all skin layers, including subcutaneous fat, and are considered full-thickness burns. These wounds are insensate to touch due to the destruction of cutaneous nerves (6). Fourth-degree burns affect all skin layers as well as muscles, tendons, and bones, and impact nerve endings (8).

Evidence from multiple studies indicates that the causative factor underlying a burn injury plays a critical role in determining the patient's subsequent clinical course and long-term prognosis (9). In their investigation, Ghahghai et al. established that several clinical and demographic parameters—namely patient age, sex, total body surface area percentage affected, burn depth, total duration of hospitalization, and time spent in the intensive care unit—all exhibited statistically significant associations with mortality outcomes in burn patients (10). Forbinake et al. reported that their burn patient cohort was predominantly male, that the majority of injuries involved more than 10% of the total body surface area, and that flame exposure was the most frequently encountered mechanism of injury (11). Similarly, in the cohort studied by Heydaripur et al., 81.5% of the subjects were male and older than 18 years; the distribution of burn etiologies was 35.2% flame-related, 34.3% electrical, and 30.6% attributable to other causes. The most frequently observed total body surface area range was 1-10%, and the overall mortality rate in that study was reported as 7.4% (12).

It is well recognized that cultural norms, social structures, and climatic conditions differ markedly from one society to another, and as a result, the spectrum of risk factors predisposing individuals to burn injuries can vary considerably across regions. Because the cornerstone of any effective accident prevention strategy is the systematic collection of information regarding the root causes and associated risk factors, coupled with the design and implementation of targeted interventions aimed at reducing adverse outcomes, it follows that the adequate provisioning and equipping of specialized burn care facilities must be grounded in a robust understanding of local burn etiologies. Such knowledge is indispensable for the prevention of debilitating complications, which may include permanent loss of musculoskeletal function, visible and psychologically distressing disfigurement, and a range of mental health disorders. In the Iranian context, burn-related injuries rank among the foremost contributors to mortality attributable to burn complications (13). For these reasons, the identification of causal mechanisms and demographic or clinical factors linked to burns assumes critical importance with respect to determining patient prognosis, anticipating clinical trajectories, and ultimately reducing death rates. The present investigation was therefore designed to examine the causative factors of burns in the patient population presenting to Taleghani Hospital over the autumn and winter months of 2023.

Methods

The present investigation adopted a cross-sectional design and was carried out after obtaining formal ethical clearance from the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences, which granted approval under the reference number IR.AJUMS.REC.1403.267. The study population consisted of 809 individuals who were admitted to Ayatollah Taleghani Hospital in Ahvaz with primary complaints of burn injury in 2023. Relevant clinical and demographic data, including patient age, sex, burn type (etiological category), burn depth (degree), percentage of total body surface area affected, and eventual clinical outcomes, were systematically abstracted from the inpatient medical records by means of a pre-designed standardized checklist. To ensure data integrity, patient files with any missing or incomplete information were excluded from the final analytical sample. Additionally, individuals treated on an outpatient basis were not incorporated into this study. Following data collection, the investigators proceeded to examine the potential associations between the underlying causes of burns and the severity parameters of burn depth, anatomical extent, and patient outcomes. For statistical inference, the data were subjected to analysis using independent two-sample t-tests for continuous variables, chi-square tests for categorical comparisons, and logistic regression modeling to identify independent predictors. The assumption of normality for continuous data was first checked using the Kolmogorov–Smirnov test, and the threshold for statistical significance was established at a p-value of less than 0.05.

Results

The mean age of patients was 30.71±17.75 years. The majority of burns were third-degree (62.3%). Regarding extent, burns involving 10-20% of total body surface area were most frequent (27.8%), followed closely by burns exceeding 60% (27.5%). Thermal burns constituted the predominant type (88.5%). Regarding outcomes, the majority of patients were discharged (66.7%), whereas 21.4% succumbed to their injuries. Etiological analysis revealed that fire (16.9%) and gasoline (15.4%) were the most common causes of burns. Paint thinner (11.1%) was also identified as a frequent causative agent. Electrical burns (9.6%) and burns from hot rice water (14.3%) accounted for considerable proportions. Less common causes included boiling water (2.5%) and acid (3.4%). Males comprised 58.9% of the burn population, compared to 41.1% females. Burns from hot rice water were more prevalent among females (13.1%), whereas thinner-related (8.7%) and electrical (7.6%) burns were more commonly observed in males (Tables 1-3).

Table 1. Prevalence of burn etiologies among patients admitted to Taleghani Hospital in 2023 stratified by burn degree

Etiological Agent	1st Degree n(%)	2nd Degree n(%)	2nd-3rd Degree n(%)	3rd Degree n(%)	4th Degree n(%)	Total n(%)
Hot rice water	0(0)	0(0)	75(9.2)	41(5.0)	0(0)	116(14.3)
Boiling water	0(0)	0(0)	7(0.9)	13(1.6)	0(0)	20(2.5)
Fire	0(0)	0(0)	47(5.8)	90(11.1)	0(0)	137(16.9)
Acid	0(0)	0(0)	10(1.2)	18(2.2)	0(0)	28(3.4)
Gas heater	0(0)	0(0)	1(0.1)	30(3.7)	0(0)	31(3.8)
Electric heater	0(0)	0(0)	33(4.1)	3(0.4)	0(0)	36(4.4)
Electricity	0(0)	0(0)	18(2.2)	60(7.4)	0(0)	78(9.6)
Gasoline	0(0)	0(0)	10(1.2)	111(13.7)	4(0.5)	125(15.4)
Paint thinner	6(0.7)	2(0.2)	16(2.0)	66(8.1)	0(0)	90(11.1)

Tea	10(1.2)	0(0)	33(4.1)	0(0)	0(0)	43(5.3)
Pressure cooker explosion	0(0)	0(0)	10(1.2)	16(2.0)	5(0.6)	31(3.8)
Oil	1(0.1)	0(0)	4(0.5)	27(3.3)	0(0)	32(3.9)
Gas	3(0.4)	0(0)	8(1.0)	31(3.8)	3(0.4)	45(5.5)
Total	20(2.5)	2(0.2)	272(33.5)	506(62.3)	12(1.5)	812(100)

Table 2. Prevalence of burn etiologies among patients admitted to Taleghani Hospital in 2023 stratified by burn extent (TBSA)

Etiology	0-10% n(%)	10-20% n(%)	20-40% n(%)	40-60% n(%)	>60% n(%)	Total n(%)
Hot rice water	28(3.4)	63(7.8)	25(3.1)	0(0)	0(0)	116(14.3)
Boiling water	7(0.9)	4(0.5)	3(0.4)	0(0)	6(0.7)	20(2.5)
Fire	15(1.8)	41(5.0)	26(3.2)	12(1.5)	43(5.3)	137(16.9)
Acid	1(0.1)	16(2.0)	5(0.6)	1(0.1)	5(0.6)	28(3.4)
Gas heater	14(1.7)	10(1.2)	4(0.5)	3(0.4)	0(0)	31(3.8)
Electric heater	3(0.4)	4(0.5)	29(3.6)	0(0)	0(0)	36(4.4)
Electricity	26(3.2)	5(0.6)	19(2.3)	13(1.6)	15(1.8)	78(9.6)
Gasoline	28(3.4)	10(1.2)	7(0.9)	13(1.6)	67(8.3)	125(15.4)
Thinner	2(0.2)	11(1.4)	11(1.4)	5(0.6)	61(7.5)	90(11.1)
Tea	10(1.2)	30(3.7)	3(0.4)	0(0)	0(0)	43(5.3)
Pressure cooker explosion	0(0)	19(2.3)	0(0)	4(0.5)	8(1.0)	31(3.8)
Oil	14(1.7)	6(0.7)	8(1.0)	0(0)	4(0.5)	32(3.9)
Gas	4(0.5)	7(0.9)	14(1.7)	6(0.7)	14(1.7)	45(5.5)
Total	152(18.7)	226(27.8)	154(19.0)	57(7.0)	223(27.5)	812(100)

Table 3. Prevalence of burn etiologies among patients admitted to Taleghani Hospital in 2023 stratified by clinical outcome

Etiological Agent	Discharge against medical advice n(%)	Routine discharge n(%)	Mortality n(%)	Total n(%)
Hot rice water	8(1.0)	108(13.3)	0(0)	116(14.3)
Boiling water	0(0)	19(2.3)	1(0.1)	20(2.5)
Fire	19(2.3)	90(11.1)	28(3.4)	137(16.9)
Acid	1(0.1)	22(2.7)	5(0.6)	28(3.4)
Gas heater	3(0.4)	28(3.4)	0(0)	31(3.8)
Electric heater	0(0)	36(4.4)	0(0)	36(4.4)
Electricity	23(2.8)	54(6.7)	1(0.1)	78(9.6)
Gasoline	11(1.4)	54(6.7)	60(7.4)	125(15.4)
Thinner	7(0.9)	24(3.0)	59(7.3)	90(11.1)
Tea	0(0)	43(5.3)	0(0)	43(5.3)
Pressure cooker explosion	4(0.5)	19(2.3)	8(1.0)	31(3.8)
Oil	13(1.6)	19(2.3)	0(0)	32(3.9)
Gas	7(0.9)	26(3.2)	12(1.5)	45(5.5)
Total	96(11.8)	542(66.7)	174(21.4)	812(100)

Discussion

The findings obtained from the current investigation indicate that patients who sustained burns attributed to fire and hot tea were, on average, significantly older in comparison to those in other etiological subgroups. A plausible explanation for this observed age-related disparity may reside in the differing lifestyles, daily routines, and engagement in high-risk activities that characterize various age cohorts. Specifically, older individuals may face an elevated risk for accidents such as household fires or accidental spills of hot beverages, owing to age-associated declines in physical dexterity, reduced mobility, and slower reflexive responses to sudden hazards. This interpretation is further reinforced by the work of Gurbuz et al., who reported that elderly patients experienced the highest rates of mortality resulting from flame-induced burns (14). Their findings are directly consistent with our own observations, as both studies identified fire-related injuries—particularly those caused by electric heaters—as being disproportionately prevalent among geriatric patients and associated with poorer survival outcomes. In a complementary vein, the investigation conducted by Campbell et al. revealed that scalding injuries from hot liquids were more commonly encountered in younger demographic groups (15), a pattern that mirrors the age distribution observed in our own dataset. Additionally, research by Rojas-Contreras et al. identified boiling water as the most frequent cause of pediatric burn injuries (16), which again aligns closely with our data showing that boiling water burns tended to affect younger patients. When considered in aggregate, these convergent lines of evidence strongly suggest that the etiological category of burn injury and the age of the affected patient are meaningfully and consistently interrelated across diverse populations and settings.

The findings of the current investigation revealed a notable gender-based disparity in the distribution of burn etiologies. Specifically, burns from hot rice water were observed more frequently among female patients, accounting for 13.1% of cases in this subgroup, while burns caused by paint thinner (8.7%) and electricity (7.6%) were more commonly documented in male patients. This observed predominance of burns from hot rice water in women may plausibly be explained by traditional sociocultural roles and domestic responsibilities that place women in closer and more frequent contact with cooking activities, particularly in households where large-scale food preparation involving hot liquids is routine. These observations are corroborated by the work of Sen et al., who reported that hot-water scalds were more prevalent in women, whereas gasoline burns were more common in men (17)—a pattern that closely mirrors our own data concerning hot rice water and gasoline injuries. However, the study conducted by Lam et al. yielded partially divergent findings; their analysis indicated that direct heat contact and electrical burns were more frequent among male subjects, while boiling water burns were more often seen in females (18). Although this aligns with our results to some extent—particularly with respect to hot rice water (a hot-liquid equivalent) and electrical burns—the differences in the specific etiological categories emphasized across studies may contribute to the observed variations. Synthesizing the evidence from multiple investigations, a coherent picture emerges: gender exerts a systematic influence on burn injury patterns. Women tend to experience a higher burden of burns associated with hot liquids, hot rice water, and culinary activities, whereas men are disproportionately affected by electrical injuries, gasoline-related incidents, and burns resulting from direct contact with high-temperature surfaces or flames.

The results of the current investigation demonstrated that burns from hot rice water were most frequently encountered at second and third degrees. This pattern is likely attributable to the elevated temperature of the liquid and the relatively prolonged duration of skin exposure, which, while sufficient to cause significant dermal injury, generally does not result in penetration to the deeper fascial or muscular layers, thereby confining the damage to the second and third degrees. In contrast, burns attributed to gasoline exhibited a more severe profile, with the majority presenting as third-degree injuries and a notable proportion even extending to fourth-degree burns, involving damage to underlying subcutaneous tissues, muscles, and in

some cases bone. This heightened severity is plausibly explained by gasoline's high volatility, rapid combustion, and its ability to permeate deeply into tissue layers, thereby producing extensive thermal destruction. Electrical burns, similarly, were most frequently documented at second and third degrees, though with variable patterns depending on voltage and contact duration. The study by Smith et al. reported that gasoline burns typically result in second-degree injuries and affect a comparatively larger percentage of the total body surface area (19). While this is partially in line with our own observations, the discrepancies observed may stem from differences in classification systems, criteria for grading burn depth, and population-specific characteristics. Overall, our findings suggest that burns caused by gasoline, hot rice water, and electricity tend to occur at higher degrees (predominantly second and third), yet the precise severity and extent of tissue involvement are modulated by the specific etiological agent as well as by demographic and environmental factors. These observations further highlight that although certain overarching patterns are discernible, significant variability exists due to divergent definitions, varying assessment methodologies, and differing geographic and cultural contexts. Such variations should be carefully weighed when interpreting study outcomes and devising region-specific prevention strategies and treatment protocols.

The results of this study clearly demonstrate that the extent of burn injury, measured as percentage of total body surface area affected, is profoundly influenced by the specific etiological agent involved. Burns resulting from hot rice water exposure were predominantly confined to the lower categories, namely 0-10% and 10–20%. This restricted extent is likely attributable to the physical characteristics of the incident: rice water burns typically occur during culinary activities, where a limited quantity of hot liquid is accidentally spilled onto a localized area of the body, and the spread is inherently constrained by the available volume of liquid and the immediate contact zone. Conversely, burns caused by gasoline, paint thinner, and open fire exhibited a markedly different pattern, with the majority of cases falling into the most extensive category of greater than 60% total body surface area. This stark contrast can be reasonably explained by the physicochemical properties of these substances—their high volatility, low flash points, and explosive combustion characteristics mean that upon ignition, they can rapidly generate large fireballs or spreading flames that engulf multiple body regions within seconds. Consequently, such burns are not only more extensive but also tend to be deeper and more destructive. These observations highlight the critical role that the intrinsic nature of each burn agent plays in determining the anatomical spread of injury, and underscore the necessity of detailed etiological knowledge for both preventive public health interventions and acute clinical decision-making. Supporting this, the investigation by Gandhi et al. reported that gasoline burns, particularly those classified as second-degree, are frequently associated with larger percentages of total body surface area (20), a conclusion that is fully concordant with the extensive burn patterns we observed in our gasoline-exposed cohort.

The study by Grant et al. demonstrated that chemical burns were associated with shorter hospital stays and lower need for mechanical ventilation (21). This finding aligns with our observations regarding hot rice water and boiling water burns, which predominantly resulted in discharge without mortality or discharge against medical advice. However, discordance was observed with respect to gasoline burns, which in our study were associated with mortality and discharge against medical advice. This discrepancy may be attributed to differences in the etiological agent and depth of injury. The study by Mehta et al., investigating cooking-related burns and stove injuries, reported higher mortality rates in low-income countries (22), a finding not consistent with our results for hot rice water and boiling water burns, in which no fatalities were documented. This divergence may reflect differences in economic conditions and healthcare quality. Eftekhari et al. identified acids as the primary cause of chemical burns, with most occurring in domestic settings (23). Similarly, Jamshidi et al., studying ingestion of caustic substances in children, found that most

cases occurred at home with alkaline agents, often requiring interventional treatments including endoscopy and surgery (24). These findings are consistent with our results regarding gas, gasoline, and chemical/alkali burns, which were associated with severe outcomes including mortality. In conclusion, the type of burn agent exerts a direct influence on patient outcomes. Burns from milder agents such as hot rice water, boiling water, and electric heaters were predominantly associated with discharge and recovery, whereas more severe injuries from gas, gasoline, and caustic ingestion frequently resulted in grave outcomes such as death. These patterns highlight the critical importance of etiological classification in prognostic assessment and reinforce the need for etiology-specific approaches to both clinical management and public health prevention. The present study thus underscores the value of systematically characterizing common burn causes and their associated outcomes. In light of these findings, the implementation of preventive strategies and public education campaigns—particularly targeting high-risk domestic and industrial environments—appears not only prudent but necessary. Concurrently, ongoing efforts to enhance acute burn care, standardize treatment protocols, and expand access to specialized services remain indispensable for reducing the overall mortality burden associated with burn injuries.

Acknowledgment

The authors wish to extend their appreciation to the dedicated staff of the Khuzestan Provincial Burn Registry for their meticulous provision of epidemiological data and their assistance in facilitating access to critical burn morbidity and mortality statistics.

References

1.Burgess M, Valdera F, Varon D, Kankuri E, Nuutila K. The Immune and Regenerative Response to Burn Injury. Cells. 2022;11(19):3073.

2.Haghshenas M, Farsi Z, Aminian N. A Review of the Generalities of Burns Care and the Introduction of a Leading Military Hospital in the Management of Burned Patients. Mil. Caring Sci. 2020;7(3):261-76. [In Persian]

3.Olaitan PB, Olaitan JO. Burns and scalds--epidemiology and prevention in a developing country. Niger J Med. 2005;14(1):9-16.

4.World Health Organization. Burn prevention: success stories and lessons learned. 2011. Available from: https://www.who.int/publications/i/item/9789241501187

5.Naghavi M, Abolhassani F, Pourmalek F, Lakeh M, Jafari N, Vaseghi S, et al. The burden of disease and injury in Iran 2003. Popul Health Metr. 2009;7:9.

6.Lloyd EC, Rodgers BC, Michener M, Williams MS. Outpatient burns: prevention and care. Am Fam Physician. 2012;85(1):25-32.

7.Shu W, Wang Y, Zhang X, Li C, Le H, Chang F. Functional Hydrogel Dressings for Treatment of Burn Wounds. Front Bioeng Biotechnol. 2021;9:788461.

8.Saied N, Harfoush A, Ayed T, Moustafa A, Hassan R, Eldolify E, et al. Team Approach Helps Patient Survive High-voltage Electric Burn. Plast Reconstr Surg Glob Open. 2017;5(3):e1243.

9.Nursal TZ, Yildirim S, Tarim A, Caliskan K, Ezer A, Noyan T. Burns in southern Turkey: electrical burns remain a major problem. J Burn Care Rehabil. 2003;24(5):309-14.

10.Ghahghai M, Ghorbani SS, Hoseininejad S, Sheikhi A, Farhadi M, Rahbar R. Factors responsible for mortality among burns patients in Islamic Republic of Iran. East Mediterr Health J. 2023;29(8):650-6.

11.Forbinake NA, Ohandza CS, Fai KN, Agbor VN, Asonglefac BK, Aroke D, et al. Mortality analysis of burns in a developing country: a CAMEROONIAN experience. BMC Public Health. 2020;20(1):1269.

12.Heydaripur M, Bahri MM, SHeykhi E. Evaluation of Burn Injuries and Epidemiological Factors in Patients Hospitalized in Shohada Mehrab Hospital in Yazd-Iran 2019. J Community Health Res. 2021;10(1):83-7.

13.Groohi B, Alaghehbandan R, Lari AR. Analysis of 1089 burn patients in province of Kurdistan, Iran. Burns. 2002;28(6):569-74.

14.Gurbuz K, Demir M. The Descriptive Epidemiology and Outcomes of Hospitalized Burn Patients in Southern Turkey: Age-Specific Mortality Patterns. J Burn Care Res. 2021;42(4):743-51.

15.Campbell S, Andres T. 98 A 10-year Retrospective Review of Older Adult Admissions at a Regional Burn Center. J Burn Care Res. 2020;41(Suppl_1):S64-5.

16.Rojas-Contreras C, De la Cruz-Ku G, Eyzaguirre-Sandoval ME, Chambergo-Michilot D, Torres-Roman JS. Fire burns matter: A case-control study of severe accidental burns in pediatric patients. Electron J Gen Med. 2023;20(1):em432.

17.Sen S, Romanowski K, Miotke S, Palmieri T, Greenhalgh D. Burn Prevention in the Elderly: Identifying Age and Gender Differences in Consumer Products Associated With Burn Injuries. J Burn Care Res. 2021;42(1):14-7.

18.Lam NN, Hung NT, Duc NM. Influence of gender difference on outcomes of adult burn patients in a developing country. Ann Burns Fire Disasters. 2019;32(3):175-8.

19.Smith H, Echternacht SR, Bell D. 554 Severity of Gasoline Burns: A Retrospective Review. J Burn Care Res. 2020;41(Suppl_1):S117-8.

20.Gandhi G, Parashar A, Sharma RK. Epidemiology of electrical burns and its impact on quality of life - the developing world scenario. World J Crit Care Med. 2022;11(1):58-69.

21.Grant GG, Stockly O, Wolfe AE, Wolf SE, Schneider JC, Ryan CM. 547 Long-term Outcomes of Chemical Burn Injuries: A Burn Model System National Database Study. J Burn Care Res. 2020;41(Suppl_1):S113-4.
22.Mehta K, Thrikutam N, Hoyte-Williams PE, Falk H, Nakarmi K, Stewart B. Epidemiology and Outcomes of Cooking- and Cookstove-Related Burn Injuries: A World Health Organization Global Burn Registry Report. J Burn Care Res. 2023;44(3):508-16.
23.Eftekhari H, Sadeghi M, Mobayen M, Esmailzadeh M, Feizkhah A, Lahiji MS, et al. Epidemiology of chemical burns: An 11-year retrospective study of 126 patients at a referral burn centre in the north of Iran. Int Wound J. 2023;20(7):2788-94.
24.Jamshidi N, Hosseiny M, Rahmani P. Frequency of Caustic Ingestion in Children Referred to Pediatric Medical Center. J Babol Univ Med Sci. 2025;27:e28. [In Persian]