

MESTRADO INTEGRADO EM MEDICINA

Psychiatric comorbidity in hospitalised burn patients: A Portuguese population- based observational retrospective study (2000-2015)

João Miguel Ramalho de Bastos

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2025



Eu, João Miguel Ramalho de Bastos, abaixo assinado, nº mecanográfico 201906998, estudante do 6º ano do Ciclo de Estudos Integrado em Medicina, na Faculdade de Medicina da Universidade do Porto, declaro ter actuado com absoluta integridade na elaboração do meu trabalho de Dissertação ou Monografia.

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Faculdade de Medicina da Universidade do Porto, 18/03/2025

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DESIGNAÇÃO DA ÁREA DO PROJECTO

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TÍTULO DISSERTAÇÃO/MONOGRAFIA (riscar o que não interessa)

Psychiatric comorbidity in hospitalised burn patients: A Portuguese populationbased observational retrospective study (2000-2015)

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ASSINALE APENAS UMA DAS OPÇÕES:

É AUTORIZADA A REPRODUÇÃO INTEGRAL DESTES TRABALHOS APENAS PARA EFEITOS DE INVESTIGAÇÃO, MEDIANTE DECLARAÇÃO ESCRITA DO INTERESSADO, QUE A TAL SE COMPROMETE.	☒
É AUTORIZADA A REPRODUÇÃO PARCIAL DESTES TRABALHOS (INDICAR, CASO TAL SEJA NECESSÁRIO, Nº MÁXIMO DE PÁGINAS, ILUSTRAÇÕES, GRÁFICOS, ETC.) APENAS PARA EFEITOS DE INVESTIGAÇÃO, MEDIANTE DECLARAÇÃO ESCRITA DO INTERESSADO, QUE A TAL SE COMPROMETE.	☐
DE ACORDO COM A LEGISLAÇÃO EM VIGOR, (INDICAR, CASO TAL SEJA NECESSÁRIO, Nº MÁXIMO DE PÁGINAS, ILUSTRAÇÕES, GRÁFICOS, ETC.) NÃO É PERMITIDA A REPRODUÇÃO DE QUALQUER PARTE DESTES TRABALHOS.	☐

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**UC Dissertação - DECLARAÇÃO DE TRANSPARÊNCIA
RELATIVAMENTE À UTILIZAÇÃO DE FERRAMENTAS DE CHATBOT
GENERATIVO BASEADAS EM LARGE LANGUAGE MODELS**

Eu, João Miguel Ramalho de Bastos, abaixo assinado, nº mecanográfico 201906998, estudante do 6º ano do Ciclo de Estudos Integrado em Medicina, na Faculdade de Medicina da Universidade do Porto, declaro que:

☒ Não procedi à utilização de ferramentas de *chatbox* generativo baseadas em *large language models* para nenhuma das tarefas no contexto do meu trabalho de Dissertação ou Monografia

☐ Procedi à utilização de ferramentas de *chatbox* generativo baseadas em *large language models* no contexto do meu trabalho de Dissertação ou Monografia, encontrando-se todas as interações (*prompts* e respostas) transcritas em anexo bem como a indicação das aplicações utilizadas.

Neste sentido, confirmo que a eventual utilização de ferramentas de *chatbox* generativo baseadas em *large language models* no contexto do meu trabalho de Dissertação ou Monografia foi exclusivamente descrita na sequência de *prompts* e respostas transcritos em anexo e nas aplicações indicadas.

Faculdade de Medicina da Universidade do Porto, 18/03/2025

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João Miguel Ramalho de Bastos

Agradecimentos

"If I have seen further, it is by standing upon the shoulders of giants"

— Sir Isaac Newton

O sentimento expresso nesta citação permite-me reconhecer e valorizar todo o conhecimento que nos é transmitido ao longo do nosso percurso académico. Com a devida dedicação, esse conhecimento permite-nos ver mais além e integrarmo-nos neste gigante metafórico, para que outros possam, por sua vez, subir aos nossos ombros.

Gostaria de transportar esta ideia do mundo científico para o meu mundo pessoal, no qual devo um especial reconhecimento ao meu orientador, Dr. Manuel Gonçalves de Pinho, ao meu coorientador, Dr. Gonçalo Gandra, e ao Professor Alberto Freitas, por todo o conhecimento transmitido, pelo apoio constante e pela disponibilidade ao longo da concretização deste projeto. Com a vossa orientação, cresci tanto a nível académico como a nível humano.

À minha família, amigos e namorada, deixo um profundo agradecimento por terem tornado o desenvolvimento desta tese de mestrado não apenas um destino a alcançar, mas sim uma jornada de crescimento, na qual a vossa presença, carinho e atenção estiveram sempre comigo, tanto nos momentos de celebração como nos mais desafiantes. Vocês são o gigante sobre o qual me posso apoiar nas minhas tentativas de ver um bocadinho mais à frente. Estou profundamente grato por o serem, visto que este não é um gigante impessoal, mas sim um gigante que apenas existe porque, dia após dia, fazem a escolha de o ser. Por este motivo, presente como representação de tudo aquilo que não cabe nestes agradecimentos, deixo aqui marcado o meu mais sincero e sentido obrigado!

Trabalho de acordo com as normas da revista “Burns”

Psychiatric comorbidity in hospitalised burn patients: A Portuguese population-based observational retrospective study (2000-2015)

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Abstract

Background: Burn injuries significantly impact health-related quality of life. However, psychiatric comorbidities among hospitalised burn patients remain understudied.

Objective: To evaluate the prevalence of psychiatric comorbidities in hospitalised burn patients in Portugal and investigate their association with burn injury characteristics, hospital outcomes, and readmission rates.

Methods: A retrospective, population-based observational study was conducted using nationwide administrative data on adult burn hospitalisations in mainland Portugal (2000–2015). Secondary diagnoses were identified using the Clinical Classification Software (mental disorder categories 650–670). Hospitalisation outcomes (length of stay, in-hospital mortality), readmission rates, and burn injury characteristics were compared using Mann-Whitney U and Chi-squared tests.

Results: Of 18,161 burn hospitalisations, 12.9% (n=2335) involved psychiatric comorbidities. Patients with psychiatric disorders had significantly longer hospital stays (median: 18 vs. 10 days, $p<0.001$), higher in-hospital mortality (7.9% vs. 5.2%, $p<0.001$), and increased rates of self-inflicted and inhalation injuries. These patients also sustained more severe burns, with $\geq 20\%$ total body surface area (TBSA) involvement being more prevalent (19.1% vs. 15.7%, $p<0.001$). Schizophrenia and other psychotic disorders, alcohol-related disorders, and delirium, dementia, and amnesic disorders were notably linked to poorer outcomes.

Conclusion: Psychiatric comorbidities in burn patients are associated with prolonged hospitalisation, increased mortality, and higher readmission rates. These findings underscore the need for early psychiatric screening and integrated multidisciplinary care to improve clinical outcomes and reduce the healthcare burden.

Keywords: Burns, psychiatric comorbidities, administrative database, hospitalisations

Introduction

Burn injuries represent a significant global health concern, with an estimated 180,000 deaths annually worldwide [1]. Additionally, non-fatal burns contribute substantially to global morbidity and are a leading cause of disability-adjusted life years (DALYs) lost [1–3]. Despite these alarming statistics, high-income countries have observed a decline in both the incidence and severity of burn injuries over recent decades [3–6], including in Europe, where mortality rates and hospital stays among burn patients have also decreased [5]. However, data on burn injury trends in countries developing their healthcare system remains sparse [4].

The impact of burns on health-related quality of life (HRQoL) is considerable. A few studies have confirmed that burn injuries significantly reduce HRQoL, with Palmu et al. demonstrating that mental disorders, particularly depression, are strong predictors of poor HRQoL outcomes at six months post-injury [7,8].

Besides, burn severity and progression are often influenced by the patient's mental status. Burn patients with psychiatric comorbidities tend to experience more severe burns, larger total body surface area (TBSA) affected, more complications, longer hospital stays, and higher mortality rates [9]. Moreover, psychiatric comorbidity present before a burn injury is consistently associated with poorer psychiatric outcomes following the injury [10–14].

Furthermore, when patients with a history of psychiatric disorders are excluded from the analysis, burn injuries are still linked with higher rates of new psychiatric disorders [11,15–17]. A self-matched cohort study by Mason et al. showed that patients with lower mental health service utilisation pre-injury experienced a threefold increase in post-burn mental health-related emergency department visits, whereas patients with higher pre-injury utilisation did not show a similar increase [18].

While the aforementioned literature highlights the association between psychiatric disease and burn events, the relationship between burn characteristics and their psychiatric outcomes remains debated. While there is evidence linking more severe injuries with a higher likelihood of psychological distress and new psychiatric diagnoses [19], there are several studies in which this association is not present [15,20,21]. In a sequence of studies conducted by Palmu et al., it was found that burn severity was not a key factor for psychiatric comorbidity in the acute phase [20] but became significant in predicting psychiatric morbidity six months post-injury [19]. Additionally, burn injuries to specific areas, such as the trunk, have been associated with higher rates of post-burn psychiatric disorders [17].

Evidence seems to suggest that mental disease in burn patients decreases with time [19,21,22]. Despite such evidence, one study conducted by Meyer et al. reported that up to 46% of burn patients continued to experience psychiatric disorders 14 years after their injury, with many experiencing multiple psychiatric disorders [23].

The presence of multiple psychiatric diagnoses among burn patients is well-supported by available evidence [14,15,19,20]. One study by Smitten et al. showed that the prevalence of multiple psychiatric comorbidities was significantly higher among burn patients when compared to the general population (49% of patients 12 months before the burn and 48% of patients for post-burn onset disorders vs. 28% for the general population) [15].

Beyond the psychiatric consequences of accidental burns, self-inflicted burn injuries represent a distinct clinical challenge due to their strong association with mental health disorders. Studies have consistently shown that psychiatric illness is the most common characteristic among individuals who sustain self-inflicted burns [24,25]. Although these cases represent a relatively small proportion of all burn injuries, with a study by Hahn et al. describing 0.9% of total burn cases [26], they are linked to worse prognoses, larger total body surface area (TBSA) involvement, and higher mortality rates [26–29]. However, the association with a higher length of stay and increased mortality remains debated, as some studies suggest that when controlling for injury severity, self-inflicted burns do not significantly differ in length of stay and mortality rates from other burn injuries [25,30–32]. Additionally, the management of self-inflicted burns presents unique challenges, such as the substance abuse often seen in these patients, particularly when compounded by coexisting psychiatric conditions, often requiring more complex medical and psychological care [33,34].

In Portugal, Santos et al. conducted a nationwide study examining the burden of burns among hospitalised patients, providing a detailed description of their characteristics while utilizing the same national dataset as this study [6]. The availability of such data, combined with the higher prevalence of psychiatric disorders among hospitalised patients compared to the general population [35], and the significant gaps in understanding burn patients' psychiatric comorbidities, served as key motivators for this present study.

The present study aims to address these research gaps by conducting a retrospective, population-based observational analysis of burn patients and their psychiatric comorbidity using a nationwide dataset. This approach allows for a more comprehensive characterization of the association between burns and psychiatric disorders, generating hypotheses that may align with existing literature or challenge current understanding by revealing previously unrecognized correlations. As one of the first studies, to the best of our knowledge, in Southern

Europe to explore this topic, it provides valuable insights into the intersection of burn injuries and mental health.

Materials and methods

Study design and reporting

A retrospective observational study, using an administrative hospitalisation database officially provided by the Authority for Health Services of the Portuguese Ministry of Health (ACSS). Data analysis, reporting, and manuscript formatting follow the REporting of studies Conducted using Observational Routinely-collected Data (RECORD) statement [36].

Study population and setting

The study considered all adult inpatient episodes from 2000 to 2015 with a main diagnosis of burns, coded as 940.xx-949.xx using the International Classification of Diseases – 9th Revision – Clinical Modification (ICD-9-CM). Each hospitalisation was considered as an independent episode and all patients aged 18 years or older were included. The year 2016 was excluded from the analysis as it marked the transition period between ICD-9-CM and ICD-10 in Portugal, which could potentially introduce data inconsistencies between classifications and impact the reliability of the findings [37].

Variables

The individual variables considered were age, sex, length of stay (LoS), discharge status, in-hospital mortality (IHM) and readmissions during the study period. Other clinical characteristics such as burn aetiology, area of burn by %TBSA, burn anatomical site, self-inflicted injury and inhalation injury were also analysed by using the ICD-9-CM codes, as described in Table 1.

Psychiatric comorbidity, as secondary diagnoses, were defined by categories of the HCUP Clinical Classification Software (CCS) categorization for ICD-9-CM [38]. The presence of any CCS code was considered as a patient with a registered mental disorder. The categories selected corresponded to all mental disorders and included CCS categories 650 (adjustment

disorders), 651 (anxiety disorders), 652 (attention-deficit. conduct, and disruptive behaviour disorders), 653 (delirium, dementia, and amnestic and other cognitive disorders), 654 (developmental disorders), 655 (disorders usually diagnosed in infancy, childhood, or adolescence), 656 (impulse control disorders, not elsewhere classified), 657 (mood disorders), 658 (personality disorders), 659 (schizophrenia and other psychotic disorders), 660 (alcohol-related disorders), 661 (substance- related disorders), 662 (suicide and intentional self-inflicted injury), 663 (screening and history of mental health and substance abuse codes) and 670 (miscellaneous mental health disorders). The inclusion of all mental disorders was done to create a more representative approach to the association between burns and such mental health disorders.

The average annual population of mainland Portugal was obtained using data from the Instituto Nacional de Estatística (INE – Statistics Portugal) [39].

To compute readmissions an anonymous patient identification approach was conducted by cross-referencing three variables as follows: sex, birth date, and place of residence, like done in previous studies [40,41].

In Table 1, self-inflicted injury was defined using ICD-9 codes E955 (suicide and self-inflicted injury by firearms, air guns, and explosives) and E958 (suicide and self-inflicted injury by other and unspecified means). These codes were selected as they most accurately represent cases where burn episodes result from self-inflicted injuries. This classification differs from the CCS code 662 (suicide and intentional self-inflicted injury), which is a broader psychiatric classification and does not specifically indicate burn-related injuries. For burn aetiology, scalds (E958.2 - suicide and self-inflicted injury by scald; E988.2 - injury by scald, undetermined whether accidentally or purposely inflicted) were classified as self-inflicted or intentional injuries caused by hot liquids or steam. In contrast, burns from hot liquids or objects (E924.x; E968.3) were categorized as accidental (E924.x) or assault-related (E968.3).

In Table 6 and in Table 7, the variables 655 (Disorders usually diagnosed in infancy, childhood, or adolescence) and 656 (Impulse control disorders, not elsewhere classified) are not presented, as no patients in the study population were classified under these categories.

Ethical considerations

The ACSS provided the dataset used in this study, which contains administrative records in an anonymized form, and approved its use for research purposes. No primary data were collected as part of the present study. Being an anonymized secondary dataset analysis,

no written informed consent was pursued. Data were analysed under data security and privacy policies.

Statistical methods

Hospitalisation rates were calculated using the number of hospitalisations in each year and the estimated annual population in that particular year.

Descriptive statistics were used to describe all episodes' characteristics. Continuous variables are presented as medians and quartiles (Q1; Q3). Categorical variables are described with absolute (N) and relative (%) frequencies. Moreover, the Mann–Whitney U and Chi-squared tests were performed to establish comparisons. All analyses were two-tailed, and a significance level of 0.05 was considered. Statistical analyses were performed using IBM SPSS Statistics® v 28.0.1.0 for Windows.

Data source, access, and cleaning methods

The database used in this study contains anonymized administrative data, diagnoses, and procedures from all hospitalisations registered in Portuguese mainland public hospitals. Inpatient episodes (≥ 24 h duration) from 2000 to 2015 were analysed.

Linkage

There were no data linkages between other databases other than the one previously described.

Results

Between 2000 and 2015, a total of 18,161 hospitalisations with a primary diagnosis of burns were registered. Of these episodes, 2335 (12.9%) had a registered mental disorder, while 15,826 (87.1%) did not. The number of episodes of burns without a registered mental disorder has been diminishing at an average rate of -2.5% per year, while the number of cases with a mental disorder has been increasing at an average rate of +5.9% per year. Table 2 describes the annual distribution of burn hospitalisations and the presence of a registered mental disorder. The total hospitalisation rate was 13.8 hospitalisations per 100,000 inhabitants per year.

Table 3 describes the characteristics and outcomes of burn hospitalisation episodes in mainland Portugal from 2000 to 2015. Most episodes occurred among male patients (57.8%), while females accounted for 42.2% of cases. The median age of hospitalised burn patients was 50.0 years (36.0; 69.0). The median length of stay (LoS) for all episodes was 11.0 days (4.0; 23.0). Regarding discharge status, a total of 13,908 (76.6%) episodes resulted in home discharge, whereas 2898 (16.0%) were transferred to another hospital or inpatient facility. Additionally, 231 (1.3%) patients left against medical advice. When it comes to mortality, 1011 (5.6%) patients died during hospitalisation. Of the overall episodes during the study period, 16,923 (92.2%) were first-time admissions, whereas 1238 (6.8%) were readmissions.

In terms of burn aetiology, fire/flames were the most frequent cause, accounting for 39.7% of cases, followed by hot liquid/object burns (29.4%). Electrical burns and chemical burns were less common, with 6.1% and 6.0% of cases, respectively, while scalds, defined as described in the methods section, were the least prevalent burn aetiology (3.5%).

Regarding burn severity, 9284 hospitalisations (51.1%) represented patients with burns affecting less than 10% of the total body surface area (TBSA) or were unspecified. However, 2350 (12.8%) patients had burns covering 20% or more of their TBSA.

Regarding the most frequently affected anatomical sites, the face, head, and neck were the most burned areas, present in 39.7% of cases, followed by the ankle and foot (35.5%), the upper limb except for the wrist and hand (34.4%), the trunk (32.4%), and the wrist and hand (29.7%). The percentage of patients with multiple specified burn sites is 6.9%.

Of all the burn hospitalisations, 149 (0.8%) were classified as self-inflicted burns, while 626 (3.4%) involved an associated inhalation injury.

Table 4 presents the comparison of episode characteristics and outcomes between burn hospitalisations in patients with and without a registered mental disorder. When comparing both groups, patients with a registered mental disorder were less likely to be discharged home (66.7% vs. 78.0%, $P<0.001$) and were more frequently transferred to other inpatient facilities (22.1% vs. 15.1%, $P<0.001$) or to specialised tertiary care (9.8% vs. 0.3%, $P<0.001$). Additionally, these patients were more likely to leave against medical advice (2.2% vs. 1.1%, $P<0.001$) compared to those without a psychiatric disorder.

Hospitalisation length was significantly longer for patients with a mental disorder, with a median length of stay of 18.0 days compared to 10.0 days in those without a registered mental disorder ($P<0.001$). Mortality was also significantly higher in the group with a mental disorder (7.9% vs. 5.2%, $P<0.001$).

Readmissions during the study period were higher among patients with a registered mental health disorder. Of the 18,161 burn hospitalisations, 195 (8.4%) involved patients with psychiatric comorbidities who were readmitted, compared to 1043 (6.6%) readmissions among patients without psychiatric disorders ($P=0.002$).

Regarding burn aetiology, while fire/flame burns were the most common cause in both groups, they were more frequent among patients with a registered mental disorder (46.9% vs. 38.6%, $P<0.001$), whereas the prevalence of other burn causes was relatively lower in this group. Hot liquid/object burns accounted for 26.9% of cases in psychiatric patients compared to 29.7% in those without a registered mental disorder. Electrical burns were also slightly less common in patients with psychiatric comorbidity (4.9% vs. 6.3%, $P=0.008$), as were chemical burns (3.8% vs. 6.3%, $P<0.001$). Scalds were the least frequent cause in both groups, occurring in 2.1% of patients with psychiatric comorbidity compared to 3.7% in patients without.

Burn severity was also greater among patients with a psychiatric disorder, with a higher percentage of cases involving $\geq 20\%$ TBSA (19.1% vs. 15.7%, $P<0.001$).

When analysing burn location, patients with a mental disorder more frequently had burns on the ankle and foot (41.2%) and the trunk (40.2%), while in the group without psychiatric comorbidity, the most affected area was the face, head, and neck (40.2%).

Furthermore, there was a significantly higher prevalence of self-inflicted burns among psychiatric patients (4.0% vs. 0.4%, $P<0.001$), as well as a higher incidence of inhalation injuries (6.2% vs. 3.0%, $P<0.001$).

Table 5 presents the comparison of episode characteristics and outcomes between self-inflicted burn episodes in patients with and without a registered mental disorder. Most self-inflicted burns occurred in patients with a registered mental health disorder (62.4%).

Hospital discharge outcomes also differed between the two groups. A higher percentage of psychiatric patients with self-inflicted burns were discharged home (50.5% vs. 32.1%, $P=0.028$), while those without a registered mental disorder were more likely to require transfer to other inpatient facilities (30.1% vs. 25.0%) or to die during hospitalisation (39.3% in-hospital mortality). Hospital mortality was significantly lower in the group of patients with psychiatric comorbidity (14.0% vs. 39.3%, $P<0.001$), even though they had a significantly longer median hospital stay (21.0 vs. 13.5 days, $P=0.018$).

Regarding readmissions, there was no significant difference between the group of patients with self-inflicted injuries that had psychiatric comorbidities and those without ($P=0.870$).

Regarding burn aetiology, almost all self-inflicted burns were caused by fire/flames, which accounted for 86.0% of cases in patients with psychiatric comorbidity and 89.3% of cases in patients without. Other causes, such as electrical or chemical burns, were rare in both groups.

Burn severity also differed between the two groups. Patients without a registered mental disorder had more extensive burns, with 48.5% having a TBSA $\geq 20\%$ compared to 39.3% in patients with psychiatric comorbidities ($P=0.027$).

Differences in burn location were not significant between both groups. However, the group of patients without psychiatric comorbidity had more cases involving multiple specified burn sites (14.3% vs. 1.1%, $P=0.002$).

Table 6 characterises hospitalisations by mental disorder categories, using the HCUP Clinical Classification Software (CCS) for ICD-9-CM. It compares age, length of stay (LoS), in-hospital mortality (IHM), and readmissions between patients with each psychiatric comorbidity and those without that diagnosis.

Patients with delirium, dementia, and amnesic disorders were a significantly older group (79 years [73.0; 85.0, $P<0.001$]), while patients with substance-related disorders and developmental disorders were significantly younger groups of patients (36 years [29.0; 42.25, $P<0.001$] and 40.5 years [31.0; 53.0, $P<0.001$], respectively).

Most psychiatric subgroups had longer hospital stays, with the highest values observed in miscellaneous mental health disorders (24 days), delirium, dementia, and amnesic disorders (20 days) and schizophrenia (20.5 days). Patients with alcohol-related disorders (19 days), screening and history of mental health and substance abuse codes (19 days) and mood disorders (18 days) also had longer hospitalisations.

Regarding in-hospital mortality (IHM), higher mortality rates were observed in patients with delirium, dementia, and amnesic disorders (14.0%, $P<0.001$) and alcohol-related disorders (10.9%, $P<0.001$). In contrast, patients with mood disorders had significantly lower mortality rates (3.4%, $P=0.019$).

Table 7 explores how the characteristics of burn injuries vary depending on the presence of different categories of mental health disorders, as classified by the HCUP Clinical Classification Software (CCS) for ICD-9-CM. The table highlights differences in burn aetiology, total body surface area (TBSA) involvement, and affected anatomical sites, compared to the group of burn patients without each specific diagnosis.

Regarding burn aetiology, fire/flames were the most common cause overall, accounting for 39.7% of all burns in the general population. However, patients with alcohol-related

disorders (60.6%) and schizophrenia and other psychotic disorders (56.7%) had significantly higher proportions of fire/flame burns ($P<0.001$ in both). Having a diagnosis of substance-related disorders was associated to a higher frequency of electrical burns (22.6%, $P<0.001$), compared to the population without the diagnosis. Burns caused by hot liquid/objects were most prevalent among patients with anxiety disorders (40.3%, $P=0.013$).

When analysing burn severity by TBSA, psychiatric subgroups exhibited percentual differences. The percentage of cases involving burns covering $\geq 20\%$ TBSA was higher among several psychiatric disorders. Patients with schizophrenia (25.6%), mood disorders (21.7%), alcohol-related disorders (20.0%), and substance-related disorders (22.1%) had a significantly higher proportion of extensive burns ($\geq 20\%$ TBSA) when compared to patients without the psychiatric comorbidity. Conversely, adjustment disorders, attention disorders, personality disorders, suicide and intentional self-inflicted injury and miscellaneous mental health disorders had just two or less (≤ 2) cases above $\geq 20\%$ TBSA.

Differences were also observed in burn location. In the general burn population, the most frequently affected areas were the face, head, and neck (39.7%), followed by the ankle and foot (35.5%) and the trunk (32.4%). However, among psychiatric patients, the distribution varied significantly. Burns affecting the face, head, and neck were more common in patients with substance-related disorders (52.7%, $P<0.001$), compared to 39.7% in the general population. Trunk burns were significantly more prevalent in patients with anxiety disorders (45.2%, $P=0.005$), mood disorders (42.3%, $P<0.001$), alcohol-related disorders (41.2%, $P<0.001$) and developmental disorders (40.9%, $P=0.023$). Burns involving the upper limbs (excluding hands) were more frequent in patients with mood disorders (38.2%), alcohol-related disorders (38.1%) and substance-related disorders (54.4%). Burns affecting the wrist and hands were most common in substance-related disorders, with 48.2% of patients with this psychiatric comorbidity having injury at this site ($P<0.001$). Lower limb burns (excluding ankle and foot) were more frequent in delirium/dementia (6.4, $P<0.001$). Burns involving the ankle and foot were significantly more prevalent in patients with delirium/dementia (48.1%), mood disorders (40.9%) and alcohol-related disorders (41.4%), when compared to the burn population without those specific psychiatric disorders.

Self-inflicted burns were more frequently observed in patients with psychiatric disorders, with personality disorders showing the highest proportion of self-inflicted burns (31.6%), aside from patients classified under suicide and intentional self-inflicted injury. Self-inflicted injuries were also significantly more prevalent in patients with developmental

disorders, mood disorders, schizophrenia and other psychotic disorders, alcohol-related disorders and substance-related disorders.

Inhalation injury was more prevalent among psychiatric patients, with most categories demonstrating a significantly higher percentage of inhalation injuries compared to population of burn patients without each psychiatric disorder.

Discussion

This study employed an observational, retrospective design to examine the relationship between psychiatric disorders and burn injuries in Portugal over a 16-year period, utilizing a nationwide dataset. It investigated how psychiatric comorbidity influences burn characteristics and various hospital outcomes. These findings contribute to the growing body of evidence highlighting the complex bidirectional relationship between mental health disorders and burn injuries. Among 18,161 inpatient episodes with a primary diagnosis of burns, 2335 cases (12.9%) had a documented psychiatric disorder. Direct comparisons with other studies are challenging due to the limited and heterogeneous nature of existing research on psychiatric comorbidity in burn inpatients. However, this proportion aligns with a previous retrospective study [9], further emphasizing the well-documented association between psychiatric illness and burn risk.

Burn Aetiology and Location

Among both patients with and without psychiatric comorbidity, fire/flame burns were the predominant cause (46.9% and 38.6%, respectively). There is a scarcity of literature on burn aetiology among inpatients with psychiatric disorders, making this one of the first analyses to explore such associations. Nevertheless, the observed differences in aetiology align closely with trends seen in burn patients without psychiatric disorders [6]. However, fire/flame burns were significantly more prevalent in patients with psychiatric comorbidity ($P < 0.001$), while all other burn aetiologies were significantly less common in this group. Notably, there is a lack of previous literature exploring this specific association, to the best of our knowledge. Our study found that 60.6% of burns in patients with alcohol-related disorders were caused by fire/flames. The high incidence of this burn aetiology in this population may partly explain the overall predominance of fire-related burns among patients with psychiatric comorbidity, as alcohol-related disorders represented the most frequent psychiatric diagnosis in our study.

population. This difference may be attributed to the well-documented association between alcohol consumption and smoking, which increases exposure to fire hazards, as well as the diminished pain sensitivity and impaired risk awareness caused by alcohol use [42,43].

Regarding burn location, patients with psychiatric comorbidity exhibited a distinct pattern, with higher rates of burns on the trunk (40.2%) and ankle/foot (41.2%), whereas patients without psychiatric comorbidity were more frequently affected by burns to the face, head, and neck (40.2%). This finding aligns with a nationwide cohort study [17] but contradicts another study [16] which reported a burn distribution similar to that observed in the group of patients without psychiatric comorbidity in our study. However, the latter study by Bich et al focused exclusively on outpatient cases, limiting its generalizability. Given that trunk burns appear more strongly associated with psychiatric disorders in our inpatient sample, this distribution suggests an underlying relationship between psychiatric illness and burn location.

Previous studies have found trunk burns to be more prevalent among self-inflicted burn injuries, such as a descriptive epidemiological analysis from the USA [29]. In our study 62.4% of self-inflicted burns in the group of patients with psychiatric comorbidity occurred in this region. Despite the high prevalence, this value was not significantly higher when compared to the group without psychiatric comorbidity ($P=0.677$). In our study no significant difference was found when it comes to burn location, in opposition to the comparison between all patients with psychiatric comorbidity versus all patients without, as mentioned previously.

The predominance of ankle/foot burns among psychiatric patients is difficult to compare with other studies, as most do not subdivide limb burns. Some studies have suggested that limb burns, particularly in men, are more common in psychiatric patients [16], while others report no significant difference [17]. Notably, ankle and foot burns are not particularly associated with self-inflicted injuries but may be linked to mental and functional impairments, which could explain their higher prevalence among inpatients with delirium and dementia in this study.

Burn Severity and Mortality

To assess burn severity, a cutoff of 20% TBSA was established, as burns beyond this threshold typically require fluid resuscitation and hospitalisation. Burn shock with systemic response is also more common in burns exceeding this threshold and can be exacerbated by hypovolemia, including that caused by alcohol use. For these reasons, 20% TBSA was selected as the reference point [44].

A key finding of this study is that patients with psychiatric comorbidity sustained more severe burns, with 19.1% of cases involving $\geq 20\%$ total body surface area (TBSA), compared to 15.7% in the group of patients without psychiatric comorbidity. While some studies suggest no significant difference in burn severity between these groups [15,21,22], others report increased severity in the group of inpatients with psychiatric comorbidity [17,19]. This discrepancy may be attributed to factors such as delayed recognition and treatment and altered consciousness due to substance use, which can impair protective reflexes. Additionally, psychiatric disorders such as schizophrenia and other psychotic disorders, mood disorders, alcohol-related disorders and substance-related disorders were significantly associated with TBSA $\geq 20\%$. As previously discussed, trunk burns were more common among patients with psychiatric comorbidity. Since some studies indicate that trunk burns necessitate more intensive care unit (ICU) admissions [45], this supports the notion that burn severity is indeed higher in these patients.

A potential confounding factor is the underreporting of total body surface area (TBSA) involvement, which was more prevalent among patients without psychiatric comorbidity (20.5% vs. 13.6%, $P < 0.001$). This discrepancy may be attributed to the lower percentage of burned body surface among these individuals. Underreporting could lead to an overestimation of burn severity in patients without psychiatric comorbidity. Additionally, first-degree burns are not included in TBSA calculations. Consequently, even if a patient sustains a burn covering the entire body, it will not be reflected in TBSA measurements if it is exclusively first-degree. Given that psychiatric patients tend to experience more severe burns, in this study, the actual difference in burn severity between those with and without psychiatric comorbidity may be underestimated.

In line with the greater severity of burns, in-hospital mortality was higher among psychiatric patients (7.9%) compared to patients without psychiatric comorbidity (5.2%), consistent with previous studies [9,46]. However, the magnitude of this association may be underestimated for several reasons. Psychiatric conditions may be underreported in burn patients, as demonstrated in a study on surgical patients [47]. Patients with known psychiatric disorders may receive earlier medical intervention due to their frequent healthcare interactions, which could mitigate burn severity.

An interesting finding is the relationship between inhalation injury, facial burns, and psychiatric comorbidity. Inhalation injury is strongly associated with mortality [48,49] and is closely linked to facial burns [50]. However, in our study, patients with psychiatric comorbidity had a higher incidence of inhalation injury but a lower prevalence of facial burns, whereas

those without psychiatric comorbidity had fewer inhalation injuries but a higher frequency of facial burns. Given the strong association between inhalation injury and mortality, this suggests that while facial burns may be proportionally less frequent in psychiatric patients, when they do occur, they may be more severe and more strongly linked to inhalation injury. This interpretation is further supported by the higher mortality rate observed in this group.

Despite being relatively rare (0.8% of cases), self-inflicted burns were disproportionately represented among psychiatric patients (62.4%). Interestingly, psychiatric patients with self-inflicted burns had lower in-hospital mortality (14.0% vs. 39.3% self-inflicted cases in patients without psychiatric comorbidity). This paradoxical finding contradicts expectations, as self-inflicted burns are typically associated with higher fatality rates [26–30] and may contribute to the previously mentioned potential underestimation of mortality. However, prior studies indicate that when controlled for TBSA, this association disappears [30–32,51], which our results also suggest given that the subgroup of psychiatric patients with self-inflicted burns had significantly fewer cases with TBSA $\geq 20\%$ (39.3% vs. 58.5%, $P=0.027$), potentially explaining their lower mortality rate.

A significant proportion of patients with personality disorders (31.5%) had self-inflicted injuries. In this study, these inpatients presented with less severe burns, with just two cases involving $\geq 20\%$ TBSA. The lower incidence of inhalation injuries in self-inflicted cases, an established predictor of higher mortality [48], may further contribute to their lower fatality rates. Additionally, psychiatric patients who engage in self-harm may not always intend a fatal outcome, supporting previous hypotheses that self-inflicted burns, particularly among younger individuals, are often impulsive rather than premeditated suicide attempts and constitute non-suicidal self-injury events [30]. These findings highlight a complex relationship between burn severity, inhalation injury, and mortality risk in this patient population.

There may also be underreporting of psychiatric disorders in patients with severe burn injuries, as altered consciousness or the inability to undergo necessary psychiatric evaluations could prevent an accurate diagnosis. This increases the likelihood that some patients classified as having no registered mental health disorder may, in fact, have one or more. As a result, this represents a limitation of the study, and the potential underestimation of psychiatric comorbidities should be considered when interpreting the findings.

These factors could contribute to an underestimation of mortality in inpatients with documented psychiatric disorders. However, the significantly higher mortality rates observed in patients with schizophrenia (9.0%), alcohol-related disorders (10.9%), and

delirium/dementia (14.0%) emphasize the need for tailored clinical management in these high-risk subgroups.

Length of Stay and Discharge Outcomes

Psychiatric burn patients had significantly longer hospital stays, with a median of 18 days compared to 10 days in the group of patients without psychiatric comorbidity ($P < 0.001$), consistent with prior studies [10,46,52]. Several factors contribute to this prolonged hospitalisation. Psychiatric patients may be more susceptible to post-burn complications, such as infections, increasing their need for extended care [9]. The higher TBSA observed in psychiatric patients is a well-documented predictor of prolonged hospital stays [53]. Social instability and functional impairments may also necessitate longer hospital stays due to the need for additional discharge planning and post-burn rehabilitation [9]. Upon discharge, psychiatric patients were less likely to return home (66.7% vs. 78.0%, $P < 0.001$) and more frequently transferred to inpatient facilities (22.1% vs. 15.1%, $P < 0.001$) or specialized care centres (0.8% vs. 0.3%, $P < 0.001$). These findings underscore the need for enhanced rehabilitation services and multidisciplinary burn-psychiatry care teams.

Compared to self-inflicted burns in patients without psychiatric comorbidity, those in patients with a registered mental health disorder were associated with significantly longer hospital stays (21.0 vs. 13.5 days, $P = 0.018$), a finding consistent with previous studies [30]. However, the same study, along with others, indicates that when controlling for burn severity (%TBSA), this difference in length of stay is no longer significant [29,30,32]. What our study adds is not only a correlation between self-inflicted injury and hospital stay duration, but also a more detailed analysis comparing the subgroup of self-inflicted burn patients with psychiatric disorders to those without.

Consistent with the literature, self-inflicted burns in psychiatric patients were found to be less severe, as discussed previously, yet their hospital stays remained longer than expected. Thombs and Bresnick [30] hypothesized that self-inflicted burns, particularly among younger individuals, are often impulsive acts occurring in the context of a psychiatric or substance use disorder. According to their findings, the prolonged hospitalisation is not necessarily a result of burn severity but rather reflects the underlying psychiatric condition and associated social or functional challenges. The present study provides further support for this hypothesis. The factors contributing to extended hospital stays in psychiatric patients, such as social instability and difficulties in self-care, likely play a similar role in those with self-inflicted burns. These

patients may require more intensive psychiatric support, rehabilitation, and discharge planning, further prolonging hospitalisation. Additionally, the association between increased length of stay appears to be consistent across all psychiatric disorders examined in this study (Table 6), reinforcing the need for multidisciplinary approaches to the management of psychiatric burn patients.

In addition to longer hospital stays, patients with psychiatric comorbidity in our study had significantly higher readmission rates (8.4% vs. 6.6%, $P = 0.002$). This aligns with existing literature demonstrating increased readmission rates among patients with psychiatric disorders [54]. Patients with psychiatric comorbidities typically have more severe burns, contributing to increased readmissions and thus representing a higher healthcare burden. This is particularly relevant since the mean charges in hospitals with burn centres, which usually manage more severe burns, tend to be higher [6]. Although percentage-wise readmissions were lower in the subgroup of patients with psychiatric disorders who had self-inflicted injuries, this difference was not statistically significant. This might be attributable to the relatively lower severity of these injuries, as previously discussed. Specific categories of psychiatric diagnoses, such as including alcohol-related disorders, suicide and intentional self-inflicted injuries, and adjustment disorders, were significantly associated with higher readmission rates, as detailed in Table 7.

Specific Psychiatric Diagnoses and Burn Outcomes

Some of the associations between psychiatric disorders and burn outcomes have already been discussed; however, to provide a more focused analysis, key findings will be reiterated and further explored. Several distinct patterns emerged when examining burn severity and hospital outcomes across different psychiatric diagnoses.

Statistical analysis was conducted by isolating each psychiatric diagnosis and comparing patients who had that diagnosis to the broader burn population without it. This approach aimed to highlight any unique considerations in patient management associated with each specific psychiatric condition, regardless of whether individuals in the comparison group had other psychiatric comorbidities.

Regarding burn aetiology, patients with substance-related disorders had a significantly higher proportion of electrical burns (22.6%, $P < 0.001$) compared to those without this diagnosis. This may be linked to the hypothesised association between substance use and copper wire theft, a practice that has been increasingly reported and is often associated with

high-voltage electrical injuries [55,56]. Additionally, in our study, substance-related disorders were significantly associated with more severe burns (TBSA $\geq 20\%$), likely reflecting the increased incidence of electrical burns, which are known to cause extensive tissue damage [57].

Schizophrenia and other psychotic disorders (25.6%), mood disorders (21.7%), alcohol-related disorders (20.0%), and substance-related disorders (22.1%) were associated with higher burn severity, involving $\geq 20\%$ TBSA. This increased severity is likely due to impaired risk assessment, cognitive deficits, and altered perception of danger, which may contribute to delayed escape from hazardous situations or reduced pain sensitivity [42,58,59]. These psychiatric diagnoses were also more frequently associated with burns to the trunk, which tend to be more severe, a finding supported by existing literature [45]. Substance-related disorders, particularly those related to alcohol and drugs, were strongly linked to fire/flame burns, with 60.6% and 56.7% of cases, respectively. This association reflects high-risk behaviours, impaired judgment, and prolonged exposure to heat sources due to intoxication. The link between substance use and flame burns has been consistently documented, further reinforcing the need for targeted prevention strategies. Patients with mood disorders, on the other hand, tended to sustain less severe burns and had lower in-hospital mortality (3.4%). This may be attributed to greater engagement with healthcare services, allowing for earlier intervention and improved outcomes. Patients with suicide and intentional self-inflicted injuries had 0.0% in-hospital mortality rate which could be explained by survivor bias, as the most severe cases may not survive long enough to be hospitalised. This bias is present for all conditions and for that reason is further discussed in the limitations of this study. In contrast, patients with delirium and dementia exhibited the highest in-hospital mortality (14.0%), highlighting the increased vulnerability of elderly psychiatric patients to burn-related complications. Cognitive impairment, reduced mobility, and delayed recognition of injury may contribute to worse prognoses in these patients.

These findings emphasize the importance of tailoring burn prevention, treatment, and rehabilitation strategies to specific psychiatric diagnoses, as different mental health conditions present unique challenges in burn care. Understanding these associations can inform targeted interventions to improve outcomes and reduce the burden of burn injuries among psychiatric patients.

Clinical Implications

This study highlights critical areas for intervention in burn care and psychiatric patient management. Given the high prevalence of psychiatric disorders among burn patients, early psychiatric screening should be integrated into acute burn care to enhance treatment adherence and reduce complications. Burn rehabilitation should incorporate long-term psychiatric monitoring and coordinated care between burn specialists, psychiatrists, and social workers. Additionally, injury prevention strategies should be tailored to specific psychiatric diagnoses. For instance, substance use disorders should be targeted with fire safety education, given their strong association with fire-related burns. This approach could also alleviate the financial burden of flame burns, which are particularly costly in Portugal [6]. Ensuring multidisciplinary post-discharge care is crucial, as psychiatric burn patients experience longer hospital stays and require more intensive follow-up. The observed differences in mortality, severity, and discharge outcomes across psychiatric diagnoses suggest that specific subgroups, such as those with schizophrenia, substance use disorders, and dementia, may require specialized clinical management. These findings reinforce the importance of integrating psychiatric and burn care services to improve patient outcomes and optimize healthcare resources. By addressing both the acute and long-term needs of these patients, healthcare systems can enhance recovery, reduce complications, and ultimately improve the quality of life for individuals affected by burns and psychiatric disorders.

Strengths

This study has several strengths. First, it is based on a large, nationwide dataset spanning 16 years, which enhances the generalizability of the findings and allows for robust statistical analysis. The inclusion of 18,161 inpatient burn cases, with detailed psychiatric comorbidity data, provides a comprehensive overview of the relationship between mental health disorders and burn outcomes. Unlike many previous studies, which are often limited to single-centre data or specific subpopulations, this study captures real-world inpatient trends across an entire healthcare system. Another key strength is the detailed examination of burn characteristics, including aetiology, anatomical distribution, severity, and hospitalisation outcomes, making this one of the first studies to thoroughly analyse these factors in psychiatric patients. Additionally, the study does not only investigate self-inflicted burns but also evaluates

how various psychiatric disorders influence burn patterns, mortality, and length of hospital stay, providing a nuanced perspective on the psychiatric-burn injury relationship.

Limitations

The study has several limitations that should be considered. One major limitation is the potential underreporting of psychiatric disorders, especially in patients with severe burns, due to altered consciousness or the inability to undergo psychiatric evaluation. This could lead to misclassification bias, where some patients in the group without psychiatric comorbidity have undiagnosed psychiatric conditions, thereby underestimating the true impact of mental health disorders on burn outcomes. Additionally, psychiatric disorders were identified in this study only if they were registered in hospital records, meaning milder or undiagnosed conditions may have gone unnoticed. This study also has the potential for survivor bias. Patients who succumb to their burns before reaching healthcare services are not included in the dataset, which may lead to an underestimation of in-hospital mortality. Another important limitation is the lack of outpatient data, as the study focuses exclusively on inpatients. This may affect the generalisability of findings to less severe burn cases, particularly those treated in outpatient settings. Another consideration is the difficulty in comparing TBSA between patients with and without psychiatric comorbidity. There may be a systematic underreporting of burn extent in without psychiatric comorbidity patients, especially those with smaller burns, which could affect comparisons of severity and mortality. Additionally, causality cannot be inferred due to the observational and retrospective nature of the study. While associations between psychiatric disorders and burn severity, aetiology, and outcomes are well documented, this design does not allow for conclusions regarding direct causation. Furthermore, while the study identifies associations between specific psychiatric disorders and burn outcomes, it does not account for the severity or duration of psychiatric illness, nor does it include information on medication use, which could influence injury risk (e.g., sedation increasing vulnerability to burns). Additionally, each psychiatric disorder is compared against the rest of the burn patient population, which allows for the specific highlighting of individual disorders. However, this approach may introduce confounding, as the comparison group includes patients with other psychiatric conditions. On the other hand, it helps balance comorbidities between groups, acknowledging that psychiatric patients typically have a higher burden of comorbidities [60].

Finally, socioeconomic factors and access to healthcare were not directly analysed, though they likely play an important role in both burn incidence and recovery outcomes.

Despite these limitations, this study provides important insights into the intersection of psychiatric illness and burn injury, highlighting the need for targeted prevention strategies, multidisciplinary burn-psychiatry care, and further research to address gaps in knowledge.

Conclusion

This study highlights the significant impact of psychiatric disorders on burn characteristics, severity, and outcomes, demonstrating that psychiatric inpatients experience higher burn severity, longer hospital stays, and increased mortality. Fire/flame burns, and trunk injuries were more common in this group, with schizophrenia, substance use disorders, and anxiety disorders particularly associated with severe burns. Despite lower burn severity, self-inflicted injuries in psychiatric patients resulted in prolonged hospital stays, reinforcing the need for multidisciplinary care.

While underreporting of psychiatric conditions and the retrospective design pose limitations, these findings emphasize the need for early psychiatric screening, targeted prevention strategies, and integrated burn-psychiatry management. Future research should explore preventive interventions and the role of psychiatric treatment in improving burn outcomes, ultimately enhancing care for this vulnerable population.

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Table 1. ICD-9-CM codes of the clinical characteristics of burns (burn aetiology, area of the burn and anatomical area, and self-inflicted or inhalation injury).

Clinical Characteristics	ICD-9-CM Codes
Burn Aetiology	
Fire/flames	E890.x–E899.x; E958.1; E968.0; E988.1
Scalds	E958.2; E988.2
Electrical	E925.x; E958.4; E988.4
Chemical	E958.7; E988.7
Hot liquid/object	E924.x; E968.3
Burn Extension by TBSA (%)	
<10% or unspecified	948.0
10–19%	948.1
20–29%	948.2
30–39%	948.3
40–49%	948.4
50–59%	948.5
60–69%	948.6
70–79%	948.7
80–89%	948.8
90–100%	948.9
Anatomical site burned	
Face, head, and neck	940.x; 941.x
Trunk	942.x
Upper limb (except wrist/hand)	943.x
Wrist(s) and hand(s)	944.x
Lower limb (except ankle/foot)	945.0; 945.4–945.6; 945.9
Ankle and foot	945.1–945.3
Multiple specified sites	946.x
Self-Inflicted Injury	E955.x; E958.x
Inhalation Injury	506.x; 947.0; 947.1; 947.9

Table 2. Burn hospitalisation episodes held in mainland Portuguese public hospitals by year and presence of mental disorder (2000–2015).

Year	Number of burn hospitalisations N (%)	Number of burns per 100,000 inhabitants ^a	Episodes without a registered mental disorder (<i>N (%) = 15,826 (87.1%)</i>) N (%)	Episodes with registered mental disorder (<i>N (%) = 2335 (12.9%)</i>) N (%)
2000	1289 (7.1)	15.8	1192 (7.5)	97 (4.2)
2001	1358 (7.5)	16.6	1227 (7.8)	131 (5.6)
2002	1259 (6.9)	15.4	1138 (7.2)	121 (5.2)
2003	1293 (7.1)	15.8	1175 (7.4)	118 (5.1)
2004	1158 (6.4)	14.1	1030 (6.5)	128 (5.5)
2005	1284 (7.1)	15.5	1168 (7.4)	116 (5.0)
2006	1158 (6.4)	14.0	1022 (6.5)	136 (5.8)
2007	1177 (6.5)	14.2	1039 (6.6)	138 (5.9)
2008	1124 (6.2)	13.6	972 (6.1)	152 (6.5)
2009	1077 (5.9)	13.1	926 (5.9)	151 (6.5)
2010	1097 (6.0)	13.3	933 (5.9)	164 (7.0)
2011	1072 (5.9)	13.1	883 (5.6)	189 (8.1)
2012	1020 (5.6)	12.5	841 (5.3)	179 (7.7)
2013	941 (5.2)	11.6	766 (4.8)	175 (7.5)
2014	927 (5.1)	11.4	770 (4.9)	157 (6.7)
2015	927 (5.1)	11.4	744 (4.7)	183 (7.8)
Total	18,161 (100.0)	13.8	15,826 (100.0)	2335 (100.0)

N: number of episodes.

^a *Adjusted for the adult (≥18 years old) Portuguese population living in the continent.*

Table 3. Characteristics and outcomes of burn hospitalisation episodes held in mainland Portugal from 2000–2015.

Episode characteristics and outcomes	All burn episodes (N (%) = 18,161 (100.0%))
Male sex, N (%)	10,498 (57.8)
Age, years, median (Q1; Q3)	50.0 (36.0; 69.0)
Age group, years, N (%)	
18–64	12,683 (69.8)
≥ 65	5478 (30.1)
Discharge status, N (%)	
Home discharge	13,908 (76.6)
Other inpatient facilities	2898 (16.0)
Episodes discharged against medical advice	231 (1.3)
Discharges to subsequent specialized tertiary care	57 (0.3)
Home Support	53 (0.3)
Other ^a	3 (0.0)
LoS, days, median (Q1; Q3)	11.0 (4.0; 23.0)
IHM^b (N, %)	1011 (5.6)
Readmissions, N (%):	
First episode	16,923 (93.2)
Readmissions	1238 (6.8)
Burn aetiology, N (%)	
Fire/flames	7205 (39.7)
Scalds	638 (3.5)
Electrical	1108 (6.1)
Chemical	1089 (6.0)
Hot liquid/object	5334 (29.4)
Burn extension, by TBSA (%), N (%)	
Less than 10% or unspecified	9284 (51.1)
10–19%	2972 (16.4)
20–29%	1058 (5.8)
30–39%	544 (3.0)
40–49%	243 (1.3)
50–59%	154 (0.8)
60–69%	103 (0.6)
70–79%	72 (0.4)
80–89%	80 (0.4)
90–100%	96 (0.5)
≥20%	2350 (12.8)
Missing	3555 (19.6)

Anatomical site burned, N (%)	
Face, head, and neck	7201 (39.7)
Trunk	5882 (32.4)
Upper limb (except wrist and hand)	6246 (34.4)
Wrist(s) and hand(s)	5398 (29.7)
Lower limb (except ankle and foot)	444 (2.4)
Ankle and foot	6,453 (35.5)
Multiple specified sites	1259 (6.9)
Self-inflicted injury	149 (0.8)
Inhalation injury	626 (3.4)

N: number of episodes; Q1; Q3: 1st quartile; 3rd quartile; IHM: In-hospital mortality; LoS: Length of stay; TBSA: Total body surface area.

^aOther: unknown, post-hospital care, palliative care, and discharges to long-term hospital care.

^bIHM is a subcategory within discharge status.

^cValid percent within burn aetiology.

Table 4. Comparison of episode characteristics and outcomes between burn hospitalisation episodes with and without a registered mental disorder.

Episode characteristics and outcomes	Burn episode in a patient with a registered mental disorder (<i>N (%)</i> = 2335 (12.9%))	Burn episode in a patient without a registered mental disorder (<i>N (%)</i> = 15,826 (87.1%))	P-value (<i>With vs without</i>) ^b
Male sex, N (%)	1355 (58.0)	9143 (57.8)	0.814
Age, years, median (Q1; Q3)	52.0 (40.0; 69.0)	50.0 (35.0; 69.0)	<0.001
Discharge status, N (%)			
Home discharge	1557 (66.7)	12,351 (78.0)	<0.001
Other inpatient facilities	515 (22.1)	2383 (15.1)	<0.001
Episodes discharged against medical advice	51 (2.2)	180 (1.1)	<0.001
Discharges to subsequent specialized tertiary care	19 (0.8)	38 (0.2)	<0.001
Home Support	8 (0.3)	45 (0.3)	0.626
Other ^a	1 (0.0)	2 (0.0)	0.338
LoS, days, median (Q1; Q3)	18.0 (8.0; 33.0)	10 (4.0; 21.0)	<0.001
IHM, N (%)	184 (7.9)	827 (5.2)	<0.001
Readmissions, N (%)	195 (8.4)	1043 (6.6)	0.002
Burn aetiology, N (%)			
Fire/flames	1095 (46.9)	6110 (38.6)	<0.001
Scalds	49 (2.1)	589 (3.7)	<0.001
Electrical	114 (4.9)	994 (6.3)	0.008
Chemical	89 (3.8)	1000 (6.3)	<0.001
Hot liquid/object	628 (26.9)	4706 (29.7)	0.005
Burn extension, by TBSA (%), N (%)			
Less than 10% or unspecified	1207 (59.8)	8077 (64.2)	
10–19%	427 (21.2)	2545 (20.2)	
20–29%	181 (9.0)	877 (7.0)	
30–39%	86 (4.3)	458 (3.6)	
40–49%	42 (2.1)	201 (1.6)	
50–59%	32 (1.6)	122 (1.0)	
60–69%	17 (0.8)	86 (0.7)	
70–79%	9 (0.5)	63 (0.5)	
80–89%	7 (0.4)	73 (0.6)	
90–100%	10 (0.5)	86 (0.7)	
≥20%	384 (19.1)	1966 (15.7)	<0.001
Missing	317 (13.6)	3238 (20.5)	<0.001

Anatomical site burned, N (%) ^c			
Face, head, and neck	841 (36.0)	6360 (40.2)	<0.001
Trunk	938 (40.2)	4944 (31.2)	<0.001
Upper limb (except wrist and hand)	845 (36.2)	5401 (34.2)	0.050
Wrist(s) and hand(s)	716 (30.7)	4682 (29.6)	0.287
Lower limb (except ankle and foot)	76 (3.3)	368 (2.3)	0.007
Ankle and foot	964 (41.2)	5489 (34.7)	<0.001
Multiple specified sites	99 (4.2)	1160 (7.3)	<0.001
Self-inflicted injury, N (%)	93 (4.0)	56 (0.4)	<0.001
Inhalation injury, N (%)	145 (6.2)	481 (3.0)	<0.001

N: number of episodes; *Q1*; *Q3*: 1st quartile; 3rd quartile; *IHM*: In-hospital mortality; *LoS*: Length of stay; *TBSA*: Total body surface area. ^aOther: unknown, post-hospital care, palliative care, and discharges to long-term hospital care. ^bP-values refer to the comparison between burn episodes with and without a registered mental disorder. P-values in discharge status, burn aetiology, burn extension by TBSA (%) $\geq 20\%$ and anatomical site burn compare with vs without that specific code or TBSA (%). A significance level of 0.05 was considered. Mann Whitney-U test was used for continuous variables (Age and LoS) and Chi-square test was performed for categoric variables (Sex; discharge status; IHM; readmissions; burn aetiology; burn extension; anatomical site burned, self-inflicted injury and inhalation injury). ^cValid percent within burn aetiology.

Table 5. Comparison of episode characteristics and outcomes between self-inflicted burn hospitalisation episodes with and without a registered mental disorder.

Episode characteristics and outcomes	Self-inflicted burn episode in a patient with a registered mental disorder (<i>N (%) = 93 (62.42%)</i>)	Self-inflicted burn episode in a patient without a registered mental disorder (<i>N (%) = 56 (37.58%)</i>)	P-value (<i>With vs without</i>) ^b
Male sex, N (%)	47 (50.5)	34 (60.7)	0.227
Age, years, median (Q1; Q3)	47.0 (36.0; 64.0)	46.5 (32.3; 63.0)	0.711
Age group, years, N (%)			
Discharge status, N (%)			
Home discharge	47 (50.5)	18 (32.2)	0.028
Other inpatient facilities	28 (30.1)	14 (25.0)	0.502
Episodes discharged against medical advice	3 (3.2)	2 (3.6)	1.000
Discharges to subsequent specialized tertiary care	2 (2.2)	0 (0.0)	0.528
Home Support	0 (0.0)	0 (0.0)	
Other ^a	0 (0.0)	0 (0.0)	
LoS, days, median (Q1; Q3)	21.0 (8.5; 41.0)	13.5 (1.3; 30.8)	0.018
IHM, N (%)	13 (14.0)	22 (39.3)	<0.001
Readmissions, N (%):	6 (6.5)	4 (7.1)	0.870
Burn aetiology, N (%)^c			
Fire/flames	80 (86.0)	50 (89.3)	0.563
Scalds	0 (0.0)	0 (0.0)	
Electrical	3 (3.2)	1 (1.8)	1.000
Chemical	2 (2.2)	1 (1.8)	1.000
Hot liquid/object	1 (1.1)	2 (3.6)	0.557
Burn extension, by TBSA (%), N (%)			
Less than 10% or unspecified	38 (42.7)	15 (28.3)	
10–19%	16 (18.0)	7 (13.2)	
20–29%	11 (12.4)	3 (5.7)	
30–39%	11 (12.4)	5 (9.4)	
40–49%	3 (3.4)	5 (9.4)	
50–59%	3 (3.4)	4 (7.5)	
60–69%	3 (3.4)	4 (7.5)	
70–79%	3 (3.4)	0 (0.0)	
80–89%	0 (0.0)	2 (3.8)	
90–100%	1 (1.1)	8 (15.1)	
≥20%	35 (39.3)	31 (58.5)	0.027

Missing	4 (4.3)	3 (5.4)	1.000
Anatomical site burned, N (%)			
Face, head, and neck	54 (58.1)	36 (64.3)	0.452
Trunk	58 (62.4)	33 (58.9)	0.677
Upper limb (except wrist and hand)	37 (39.8)	29 (51.8)	0.153
Wrist(s) and hand(s)	36 (38.7)	26 (46.4)	0.355
Lower limb (except ankle and foot)	0 (0.0)	0 (0.0)	
Ankle and foot	34 (36.6)	22 (39.3)	0.739
Multiple specified sites	1 (1.1)	8 (14.3)	0.002
Inhalation injury, N (%)	13 (14.0)	11 (19.6)	0.362

N: number of episodes; *Q1*; *Q3*: 1st quartile; 3rd quartile; *IHM*: In-hospital mortality; *LoS*: Length of stay; *TBSA*: Total body surface area. ^aOther: unknown, post-hospital care, palliative care, and discharges to long-term hospital care. ^bP-values refer to the comparison between self-inflicted burn episodes with and without a registered mental disorder. P-values in discharge status, burn aetiology, burn extension by *TBSA* (%) $\geq 20\%$ and anatomical site burn compare with vs without that specific code or *TBSA* (%). A significance level of 0.05 was considered. Mann Whitney-U test was used for continuous variables (*Age* and *LoS*) and Chi-square test was performed for categoric variables (*Sex*; discharge status; *IHM*; readmissions; burn aetiology; burn extension; anatomical site burned and inhalation injury). ^cValid percent within burn aetiology.

Table 6. Characterization of burn hospitalisations with mental disorder categories presented according to HCUP Clinical Classification Software (CCS) categorization for ICD-9-CM.

Mental Disorder	N (%*) of episodes with each category	Age (years) Median (Q1; Q3; P-value)	LoS (days) Median (Q1; Q3; P-value)	IHM N (%; P-value)	Readmissions N (%; P-value)
650 - Adjustment disorders	17 (0.7)	43.0 (31.5; 61.0; 0.285)	18.0 (11.0; 34.5; 0.061)	0 (0.0; 0.621)	4 (23.5; 0.025)
651 - Anxiety disorders	104 (4.5)	49.0 (39.0; 64.0; 0.931)	15.5 (6.0; 28.8; 0.012)	5 (4.8; 0.735)	10 (9.6; 0.256)
652 - Attention-deficit, conduct, and disruptive behaviour disorders	4 (0.2)	55.5 (32.0; 79.8; 0.718)	10.0 (6.0; 56.0; 0.712)	0 (0.0; 1.000)	0 (0.0; 1.000)
653 - Delirium, dementia, and amnesic and other cognitive disorders	264 (11.3)	79.0 (73.0; 85.0; <0.001)	20.0 (9.0; 41.0; <0.001)	37 (14.0; <0.001)	24 (9.1; 0.140)
654 - Developmental disorders	154 (6.6)	40.5 (31.0; 53.0; <0.001)	18.0 (9.0; 34.0; <0.001)	13 (8.4; 0.118)	7 (4.5; 0.261)
657 - Mood disorders	589 (25.2)	53.0 (42.0; 67.0; 0.007)	18.0 (8.0; 33.0; <0.001)	20 (3.4; 0.019)	45 (7.6; 0.420)
658 - Personality disorders	19 (0.8)	43.0 (27.0; 47.0; 0.010)	12.0 (6.0; 26.0; 0.574)	1 (5.3; 1.000)	3 (15.8; 0.136)
659 - Schizophrenia and other psychotic disorders	134 (5.7)	48.5 (36.8; 61.0; 0.243)	20.5 (7.8; 39.3; <0.001)	12 (9.0; 0.086)	10 (7.5; 0.766)
660 - Alcohol-related disorders	741 (31.7)	54.0 (46.0; 66.0; <0.001)	19.0 (9.0; 34.0; <0.001)	81 (10.9; <0.001)	74 (10.0; <0.001)
661 - Substance-related disorders	226 (9.7)	36.0 (29; 42.3; <0.001)	15.0 (5.0; 28.0; <0.001)	14 (6.2; 0.679)	18 (8.0; 0.491)
662 - Suicide and intentional self-inflicted injury	11 (0.5)	49.0 (33.0; 66.0; 0.947)	14.0 (9.0; 37.0; 0.266)	0 (0.0; 1.000)	3 (27.3; 0.034)
663 - Screening and history of mental health and substance abuse codes	411 (17.6)	48.0 (37.0; 59.0; <0.001)	19.0 (7.0; 31.0; <0.001)	18 (4.4; 0.288)	32 (7.8; 0.430)
670 - Miscellaneous mental health disorders	21 (0.9)	66.0 (41.5; 80.0; 0.066)	24.0 (17.0; 54.0; <0.001)	0 (0.0; 0.628)	1 (4.8; 1.000)

*N: number of episodes; Q1; Q3: 1st quartile; 3rd quartile; IHM: In-hospital mortality; LoS: Length of stay. ^bP-values refer to the comparison between burn episodes with and without the specific mental disorder. A significance level of 0.05 was considered. Mann Whitney-U test was used for continuous variables (Age and LoS) and Chi-square test was performed for categoric variables (IHM and readmissions). * % of episodes with each category of the total hospitalisation episodes with a registered mental disorder (2335).*

Table 7. Burn characteristics in hospitalisations with mental disorder categories presented according to HCUP Clinical Classification Software (CCS) categorization for ICD-9-CM.

N (%*, P-value ^a)	650 Adjustment Disorders (%; P-value)	651 Anxiety Disorders (%; P-value)	652 Attention- Deficit, Conduct, and Disruptive Behaviour Disorders (%; P-value)	653 Delirium, Dementia, and Amnesic and other cognitive disorders (%; P-value)	654 Developmen tal Disorders (%; P-value)	657 Mood Disorders (%; P-value)	658 Personality Disorders (Self- inflicted relevant) (%; P-value)	659 Schizophren ia and Other Psychotic Disorders (%; P-value)	660 Alcohol- Related Disorders (%; P-value)	661 Substance- Related Disorders (%; P-value)	662 Suicide and Intentional Self- Inflicted Injury (%; P-value)	663 Screening and History of Mental Health and Substance Abuse (%; P-value)	670 Miscellaneo us Mental Health Disorders (%; P-value)
Burn Aetiology^b													
Fire/flames	6 (35.3; 0.712)	31 (29.8; 0.039)	2 (50.0; 0.652)	128 (48.5; 0.003)	75 (48.7; 0.021)	221 (37.5; 0.278)	8 (42.1; 0.828)	76 (56.7; <0.001)	449 (60.6; <0.001)	98 (43.4; 0.254)	6 (54.6; 0.363)	168 (40.9; 0.614)	14 (66.7; 0.011)
Scalds	0 (0.0; 1.000)	2 (1.9; 0.590)	1 (25.0; 0.133)	13 (4.9; 0.210)	9 (5.8; 0.115)	10 (1.7; 0.015)	0 (0.0; 1.000)	4 (3.0; 1.000)	11 (1.5; 0.002)	3 (1.3; 0.073)	0 (0.0; 1.000)	3 (0.7; 0.002)	1 (4.8; 0.528)
Electrical	1 (5.9; 1.000)	8 (7.7; 0.497)	0 (0.0; 1.000)	2 (0.8; <0.001)	3 (2.0; 0.031)	11 (2.9; <0.001)	0 (0.0; 0.627)	6 (4.5; 0.431)	16 (2.2; <0.001)	51 (22.6; <0.001)	1 (9.1; 0.500)	36 (8.8; 0.023)	1 (4.8; 1.000)
Chemical	1 (5.9; 1.000)	7 (6.7; 0.752)	0 (0.0; 1.000)	9 (3.4; 0.074)	5 (3.3; 0.149)	28 (4.8; 0.197)	1 (5.3; 1.000)	5 (3.7; 0.268)	14 (1.9; <0.001)	8 (3.5; 0.118)	1 (9.1; 0.494)	19 (4.6; 0.235)	0 (0.0; 0.634)
Hot liquid/object	4 (23.5; 0.791)	42 (40.4; 0.013)	1 (25.0; 1.000)	95 (36.0; 0.017)	48 (31.2; 0.623)	187 (31.8; 0.198)	4 (21.1; 0.426)	25 (18.7; 0.006)	154 (20.8; <0.001)	28 (12.4; <0.001)	0 (0.0; 0.041)	104 (25.3; 0.067)	4 (19.1; 0.299)
Burn Extension by TBSA													
<10% or unspecified	7 (53.8)	54 (60.7)	2 (50.0)	142 (65.4)	89 (68.5)	303 (59.9)	14 (77.8)	64 (51.2)	346 (54.1)	114 (55.9)	4 (50.0)	243 (66.0)	16 (88.9)
10-19%	4 (30.8)	15 (16.9)	1 (25.0)	35 (16.1)	25 (19.2)	93 (18.4)	2 (11.1)	29 (23.2)	165 (25.8)	45 (22.1)	2 (25.0)	77 (20.9)	1 (5.6)
20-29%	0 (0.0)	8 (9.0)	1 (25.0)	23 (10.6)	7 (5.4)	49 (9.7)	1 (5.6)	15 (12.0)	58 (9.1)	21 (10.3)	1 (12.5)	22 (6.0)	1 (5.6)
30-39%	0 (0.0)	5 (5.6)	0 (0.0)	7 (3.2)	5 (3.8)	25 (4.9)	0 (0.0)	10 (8.0)	34 (5.3)	11 (5.4)	1 (12.5)	11 (3.0)	0 (0.0)
40-49%	1 (7.7)	2 (2.2)	0 (0.0)	2 (0.9)	2 (1.5)	19 (3.8)	0 (0.0)	2 (1.6)	13 (2.0)	3 (1.5)	0 (0.0)	4 (1.1)	0 (0.0)
50-59%	0 (0.0)	1 (1.1)	0 (0.0)	2 (0.9)	2 (1.5)	7 (1.4)	0 (0.0)	2 (1.6)	12 (1.9)	6 (2.9)	0 (0.0)	5 (1.4)	0 (0.0)
60-69%	0 (0.0)	4 (4.5)	0 (0.0)	2 (0.9)	0 (0.0)	1 (0.2)	0 (0.0)	3 (2.4)	5 (0.8)	2 (1.0)	0 (0.0)	3 (0.8)	0 (0.0)
70-79%	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (0.8)	1 (5.6)	0 (0.0)	2 (0.3)	2 (1.0)	0 (0.0)	0 (0.0)	0 (0.0)
80-89%	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.5)	0 (0.0)	3 (0.6)	0 (0.0)	0 (0.0)	2 (0.3)	0 (0.0)	0 (0.0)	1 (0.3)	0 (0.0)

90-100%	1 (7.7)	0 (0.0)	0 (0.0)	3 (1.4)	0 (0.0)	2 (0.4)	0 (0.0)	0 (0.0)	2 (0.3)	0 (0.0)	0 (0.0)	2 (0.5)	0 (0.0)
≥20%	2 (15.4; 0.322)	20 (22.5; 0.100)	1 (25.0; 0.504)	40 (18.4; 0.344)	16 (12.3; 0.239)	110 (21.7; <0.001)	2 (11.1; 0.755)	32 (25.6; 0.004)	128 (20.0; 0.006)	45 (22.1; 0.019)	2 (25.0; 0.623)	48 (13.0; 0.107)	1 (5.6; 0.340)
Missing	4 (23.5; 0.758)	15 (14.4; 0.184)	0 (0.0; 1.000)	47 (17.8; 0.465)	24 (15.6; 0.210)	83 (14.1; <0.001)	1 (5.3; 0.151)	9 (6.7; <0.001)	102 (13.8; <0.001)	22 (9.7; <0.001)	3 (27.3; 0.459)	43 (10.5; <0.001)	3 (14.3; 0.783)
Burn extension, by part of body													
Face, head and neck	6 (35.3; 0.713)	29 (27.9; 0.014)	0 (0.0; 0.157)	70 (26.5; <0.001)	47 (30.5; 0.020)	217 (36.8; 0.157)	5 (26.3; 0.234)	49 (36.6; 0.464)	261 (35.2; 0.012)	119 (52.7; <0.001)	3 (27.3; 0.543)	166 (40.4; 0.757)	8 (38.1; 0.884)
Trunk	6 (35.2; 0.798)	47 (45.2; 0.005)	3 (75.0; 0.103)	97 (36.7; 0.128)	63 (40.9; 0.023)	249 (42.3; <0.001)	7 (36.8; 0.678)	51 (38.1; 0.159)	317 (42.8; <0.001)	93 (41.2; 0.005)	2 (18.2; 0.521)	139 (33.8; 0.530)	8 (38.1; 0.576)
Upper limb (except wrist and hand)	4 (23.5; 0.346)	35 (33.7; 0.874)	1 (25.0; 1.000)	72 (27.3; 0.014)	46 (29.9; 0.235)	225 (38.2; 0.048)	3 (15.8; 0.088)	40 (29.9; 0.267)	282 (38.1; 0.032)	123 (54.4; <0.001)	3 (27.3; 0.758)	149 (36.3; 0.422)	8 (38.1; 0.721)
Wrist(s) and hand(s)	5 (29.4; 0.978)	31 (29.8; 0.985)	2 (50.0; 0.587)	37 (14.0; <0.001)	43 (27.9; 0.623)	182 (30.9; 0.525)	7 (36.8; 0.497)	42 (31.3; 0.680)	214 (28.9; 0.608)	109 (48.2; <0.001)	3 (27.3; 1.000)	148 (36.0; 0.005)	8 (38.1; 0.401)
Lower limb (except ankle and foot)	1 (5.9; 0.344)	4 (3.9; 0.326)	0 (0.0; 1.000)	17 (6.4; <0.001)	5 (3.3; 0.431)	11 (1.9; 0.356)	0 (0.0; 1.000)	6 (4.5; 0.147)	21 (2.8; 0.484)	7 (3.1; 0.523)	0 (0.0; 1.000)	13 (3.2; 0.340)	0 (0.0; 1.000)
Ankle and foot	6 (35.3; 0.984)	41 (39.4; 0.406)	1 (25.0; 1.000)	127 (48.1; <0.001)	67 (43.6; 0.038)	241 (40.9; 0.006)	3 (15.8; 0.072)	44 (32.8; 0.513)	307 (41.4; 0.001)	76 (33.6; 0.547)	6 (54.6; 0.214)	165 (40.2; 0.048)	11 (52.4; 0.106)
Multiple specified sites	1 (5.9; 1.000)	3 (2.9; 0.103)	0 (0.0; 1.000)	11 (4.2; 0.075)	2 (1.3; 0.006)	27 (4.6; 0.023)	1 (5.3; 1.000)	9 (6.7; 0.921)	34 (4.6; 0.010)	10 (4.4; 0.135)	0 (0.0; 1.000)	15 (3.7; 0.008)	0 (0.0; 0.396)
Self-inflicted injury	0 (0.0; 1.000)	2 (1.9; 0.210)	1 (25.0; 0.032)	3 (1.1; 0.480)	6 (4.1; 0.002)	47 (8.0; <0.001)	6 (31.6; <0.001)	17 (12.7; <0.001)	24 (3.2; <0.001)	11 (4.9; <0.001)	5 (45.5; <0.001)	7 (1.7; 0.086)	1 (4.8; 0.159)
Inhalation injury	3 (17.7; 0.019)	8 (7.7; 0.027)	1 (25.0; 0.131)	14 (5.3; 0.096)	12 (7.8; 0.003)	43 (7.3; <0.001)	2 (10.5; 0.138)	11 (8.2; 0.007)	45 (6.1; <0.001)	23 (10.2; <0.001)	1 (9.1; 0.320)	32 (7.8; <0.001)	1 (4.8; 0.521)

N: number of episodes; *TBSA*: Total body surface area. ^a*P*-values refer to the comparison between self-inflicted burn episodes with and without a registered mental disorder. *P*-values in burn extension by *TBSA* (%) ≥20% and anatomical site burn compare with vs without that specific code or *TBSA* (%). A significance level of 0.05 was considered. Chi-square test was performed for categoric variables (Burn aetiology; burn extension; anatomical site burned, self-inflicted injury and inhalation injury). ^bIn burn aetiology; percentage corresponds to valid percent within burn aetiology. * % of episodes within the number of episodes of each specific mental health disorder.

The RECORD statement – checklist of items, extended from the STROBE statement, that should be reported in observational studies using routinely collected health data.

	Item No.	STROBE items	Location in manuscript where items are reported	RECORD items	Location in manuscript where items are reported
Title and abstract					
	1	(a) Indicate the study's design with a commonly used term in the title or the abstract (b) Provide in the abstract an informative and balanced summary of what was done and what was found	(a) Page 1: "A retrospective, population-based observational study was conducted using nationwide administrative data on adult burn hospitalisations in mainland Portugal (2000–2015)." (b) Page 1: "To evaluate the prevalence of psychiatric comorbidities in hospitalised burn patients in Portugal and investigate their association with burn injury characteristics, hospital outcomes, and readmission rates." "Patients with psychiatric disorders had significantly longer hospital stays (median: 18 vs. 10 days, $p<0.001$), higher in-hospital mortality (7.9% vs. 5.2%, $p<0.001$), and increased rates of self-inflicted and inhalation injuries. These patients also sustained more severe burns, with $\geq 20\%$ total body surface area (TBSA) involvement being more prevalent (19.1% vs. 15.7%, $p<0.001$). Schizophrenia and other psychotic disorders, alcohol-related disorders, and delirium, dementia, and amnesic disorders were notably linked to poorer outcomes."	RECORD 1.1: The type of data used should be specified in the title or abstract. When possible, the name of the databases used should be included. RECORD 1.2: If applicable, the geographic region and timeframe within which the study took place should be reported in the title or abstract. RECORD 1.3: If linkage between databases was conducted for the study, this should be clearly stated in the title or abstract.	RECORD 1.1: Page 1: "A retrospective, population-based observational study was conducted using nationwide administrative data on adult burn hospitalisations in mainland Portugal (2000–2015)." RECORD 1.2: Page 1: "(...) in mainland Portugal (2000–2015)." RECORD 1.3: N/A
Introduction					

Background rationale	2	Explain the scientific background and rationale for the investigation being reported	Page 2: "Burn injuries represent a significant global health concern, with an estimated 180,000 deaths annually worldwide [1]." Page 2: "Burn severity and progression are often influenced by the patient's mental status. Burn patients with psychiatric comorbidities tend to experience more severe burns, larger total body surface area (TBSA) affected, more complications, longer hospital stays, and higher mortality rates [9]." Page 2: "Furthermore, when patients with a history of psychiatric disorders are excluded from the analysis, burn injuries are still linked with higher rates of new psychiatric disorders [11,15–17]." Page 2: "While the aforementioned literature highlights the association between psychiatric disease and burn events, the relationship between burn characteristics and their psychiatric outcomes remains debated. While there is evidence linking more severe injuries with a higher likelihood of psychological distress and new psychiatric diagnoses [19], there are several studies in which this association is not present [15,20,21]." Page 3: "In Portugal, Santos et al. conducted a nationwide study examining the burden of burns among hospitalised patients, providing a detailed description of their characteristics while utilizing the same national dataset as this study [6]. The availability of such data,		
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			combined with the higher prevalence of psychiatric disorders among hospitalised patients compared to the general population [35], and the significant gaps in understanding burn patients' psychiatric comorbidities, served as key motivators for this present study."		
Objectives	3	State specific objectives, including any prespecified hypotheses	Page 3 : "The present study aims to address these research gaps by conducting a retrospective, population-based observational analysis of burn patients and their psychiatric comorbidity using a nationwide dataset." Page 3 : "This approach allows for a more comprehensive characterization of the association between burns and psychiatric disorders, generating hypotheses that may align with existing literature or challenge current understanding by revealing previously unrecognized correlations."		
Methods					
Study Design	4	Present key elements of study design early in the paper	Page 4: "A retrospective observational study, using an administrative hospitalisation database officially provided by the Authority for Health Services of the Portuguese Ministry of Health (ACSS). Data analysis, reporting, and manuscript formatting follow the REporting of studies Conducted using Observational Routinely-collected Data (RECORD) statement [36]."		
Setting	5	Describe the setting, locations, and relevant dates, including periods of	Page 4: "The study considered all adult inpatient episodes from 2000 to 2015 with a main diagnosis of burns,		

		recruitment, exposure, follow-up, and data collection	coded as 940.xx-949.xx using the International Classification of Diseases – 9th Revision – Clinical Modification (ICD-9-CM). Each hospitalisation was considered as an independent episode and all patients aged 18 years or older were included." Page 4: "The year 2016 was excluded from the analysis as it marked the transition period between ICD-9-CM and ICD-10 in Portugal, which could potentially introduce data inconsistencies between classifications and impact the reliability of the findings [37]."		
Participants	6	(a) <i>Cohort study</i> - Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up <i>Case-control study</i> - Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls <i>Cross-sectional study</i> - Give the eligibility criteria, and the sources and methods of selection of participants (b) <i>Cohort study</i> - For matched studies, give matching criteria and number of exposed and unexposed	(a) Page 4: "The study considered all adult inpatient episodes from 2000 to 2015 with a main diagnosis of burns, coded as 940.xx-949.xx using the International Classification of Diseases – 9th Revision – Clinical Modification (ICD-9-CM). Each hospitalisation was considered as an independent episode and all patients aged 18 years or older were included." Page 4: "Psychiatric comorbidity, as secondary diagnoses, were defined by categories of the HCUP Clinical Classification Software (CCS) categorization for ICD-9-CM [38]. The presence of any CCS code was considered as a patient with a registered mental disorder." (b) N/A	RECORD 6.1: The methods of study population selection (such as codes or algorithms used to identify subjects) should be listed in detail. If this is not possible, an explanation should be provided. RECORD 6.2: Any validation studies of the codes or algorithms used to select the population should be referenced. If validation was conducted for this study and not published elsewhere, detailed methods and results should be provided. RECORD 6.3: If the study involved linkage of databases, consider use of a flow diagram or other graphical display to demonstrate the data linkage process, including the number of individuals with linked data at each stage.	RECORD 6.1: Page 4: "The study considered all adult inpatient episodes from 2000 to 2015 with a main diagnosis of burns, coded as 940.xx-949.xx using the International Classification of Diseases – 9th Revision – Clinical Modification (ICD-9-CM). Each hospitalisation was considered as an independent episode and all patients aged 18 years or older were included." Page 4: "Psychiatric comorbidity, as secondary diagnoses, were defined by categories of the HCUP Clinical Classification Software (CCS) categorization for ICD-9-CM [38]. The presence of any CCS code was considered as a patient with a registered mental disorder." RECORD 6.2: Page 4:

		<i>Case-control study</i> - For matched studies, give matching criteria and the number of controls per case			"Psychiatric comorbidity, as secondary diagnoses, were defined by categories of the HCUP Clinical Classification Software (CCS) categorization for ICD-9-CM [38]." RECORD 6.3: Page 6: "There were no data linkages between other databases beyond the nationwide administrative hospitalisation database used in this study."
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable.	Page 4: "The individual variables considered were age, sex, length of stay (LoS), discharge status, in-hospital mortality (IHM) and readmissions during the study period. Other clinical characteristics such as burn aetiology, area of burn by %TBSA, burn anatomical site, self-inflicted injury and inhalation injury were also analysed by using the ICD-9-CM codes, as described in Table 1." Page 4: "Psychiatric comorbidity, as secondary diagnoses, were defined by categories of the HCUP Clinical Classification Software (CCS) categorization for ICD-9-CM [38]. The presence of any CCS code was considered as a patient with a registered mental disorder. The categories selected corresponded to all mental disorders and included CCS categories 650 (adjustment disorders), 651 (anxiety disorders), 652 (attention-deficit, conduct, and disruptive behaviour disorders), 653 (delirium, dementia, and amnesic and other cognitive disorders), 654	RECORD 7.1: A complete list of codes and algorithms used to classify exposures, outcomes, confounders, and effect modifiers should be provided. If these cannot be reported, an explanation should be provided.	RECORD 7.1: Page 4: "The individual variables considered were age, sex, length of stay (LoS), discharge status, in-hospital mortality (IHM) and readmissions during the study period. Other clinical characteristics such as burn aetiology, area of burn by %TBSA, burn anatomical site, self-inflicted injury and inhalation injury were also analysed by using the ICD-9-CM codes, as described in Table 1." Page 25: "Table 1. ICD-9-CM codes of the clinical characteristics of burns (burn aetiology, area of the burn and anatomical area, and self-inflicted or inhalation injury)." Burn Aetiology Fire/flames: E890.x–E899.x; E958.1; E968.0; E988.1

			(developmental disorders), 655 (disorders usually diagnosed in infancy, childhood, or adolescence), 656 (impulse control disorders, not elsewhere classified), 657 (mood disorders), 658 (personality disorders), 659 (schizophrenia and other psychotic disorders), 660 (alcohol-related disorders), 661 (substance-related disorders), 662 (suicide and intentional self-inflicted injury), 663 (screening and history of mental health and substance abuse codes) and 670 (miscellaneous mental health disorders). The inclusion of all mental disorders was done to create a more representative approach to the association between burns and such mental health disorders. " Page 5: "In Table 1, self-inflicted injury was defined using ICD-9 codes E955 (suicide and self-inflicted injury by firearms, air guns, and explosives) and E958 (suicide and self-inflicted injury by other and unspecified means). These codes were selected as they most accurately represent cases where burn episodes result from self-inflicted injuries. This classification differs from the CCS code 662 (suicide and intentional self-inflicted injury), which is a broader psychiatric classification and does not specifically indicate burn-related injuries. "		- Scalds: E958.2; E988.2 - Electrical: E925.x; E958.4; E988.4 - Chemical: E958.7; E988.7 - Hot liquid/object: E924.x; E968.3 Burn Extension by TBSA (%) <10% or unspecified: 948.0 10–19%: 948.1 20–29%: 948.2 30–39%: 948.3 40–49%: 948.4 50–59%: 948.5 60–69%: 948.6 70–79%: 948.7 80–89%: 948.8 90–100%: 948.9 Anatomical site burned - Face, head, and neck: 940.x; 941.x - Trunk: 942.x - Upper limb (except wrist/hand): 943.x - Wrist(s) and hand(s): 944.x - Lower limb (except ankle/foot): 945.0; 945.4–945.6; 945.9 - Ankle and foot: 945.1–945.3
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				• Multiple specified sites; 946.x Self-Inflicted Injury • E955.x; E958.x Inhalation Injury • 506.x; 947.0; 947.1; 947.9 Page 4: "Psychiatric comorbidity, as secondary diagnoses, were defined by categories of the HCUP Clinical Classification Software (CCS) categorization for ICD-9-CM [38]. The presence of any CCS code was considered as a patient with a registered mental disorder." Psychiatric Comorbidities (HCUP CCS Codes) • 650: Adjustment disorders • 651: Anxiety disorders • 652: Attention-deficit, conduct, and disruptive behaviour disorders • 653: Delirium, dementia, and amnesic and other cognitive disorders
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				• 654: Developmental disorders • 655: Disorders usually diagnosed in infancy, childhood, or adolescence • 656: Impulse control disorders, not elsewhere classified • 657: Mood disorders • 658: Personality disorders • 659: Schizophrenia and other psychotic disorders • 660: Alcohol-related disorders • 661: Substance-related disorders • 662: Suicide and intentional self-inflicted injury • 663: Screening and history of mental health and substance abuse codes • 670: Miscellaneous mental health disorders
Data sources/ measurement	8	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	Page 4: "The individual variables considered were age, sex, length of stay (LOS), discharge status, in-hospital mortality (IHM) and readmissions during the study period. Other clinical characteristics such as burn aetiology, area of burn by %TBSA, burn anatomical site, self-inflicted injury and inhalation injury	

			were also analysed by using the ICD-9-CM codes, as described in Table 1." Page 4: "Psychiatric comorbidity, as secondary diagnoses, were defined by categories of the HCUP Clinical Classification Software (CCS) categorization for ICD-9-CM [38]. The presence of any CCS code was considered as a patient with a registered mental disorder." Page 5: "To compute readmissions an anonymous patient identification approach was conducted by cross-referencing three variables as follows: sex, birth date, and place of residence, like done in previous studies [40,41]." Page 5: "In Table 1, self-inflicted injury was defined using ICD-9 codes E955 (suicide and self-inflicted injury by firearms, air guns, and explosives) and E958 (suicide and self-inflicted injury by other and unspecified means). These codes were selected as they most accurately represent cases where burn episodes result from self-inflicted injuries. This classification differs from the CCS code 662 (suicide and intentional self-inflicted injury), which is a broader psychiatric classification and does not specifically indicate burn-related injuries." Page 5: "The average annual population of mainland Portugal was obtained using data from the Instituto Nacional de Estatística (INE – Statistics Portugal) [39]."		
Bias	9	Describe any efforts to address potential sources of bias	Page 4: "The year 2016 was excluded from the analysis as it marked the transition period between ICD-9-CM		

			and ICD-10 in Portugal, which could potentially introduce data inconsistencies between classifications and impact the reliability of the findings [37]." Page 5: The inclusion of all mental disorders was done to create a more representative approach to the association between burns and such mental health disorders.		
Study size	10	Explain how the study size was arrived at	Page 6: "Between 2000 and 2015, a total of 18,161 hospitalisations with a primary diagnosis of burns were registered."		
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen, and why	Page 6: "Descriptive statistics were used to describe all episodes' characteristics. Continuous variables are presented as medians and quartiles (Q1; Q3). Categorical variables are described with absolute (N) and relative (%) frequencies. Moreover, the Mann–Whitney U and Chi-squared tests were performed to establish comparisons. All analyses were two-tailed, and a significance level of 0.05 was considered. Statistical analyses were performed using IBM SPSS Statistics® v 28.0.1.0 for Windows."		
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding (b) Describe any methods used to examine subgroups and interactions (c) Explain how missing data were addressed	(a) Page 6: "Hospitalisation rates were calculated using the number of hospitalisations in each year and the estimated annual population in that particular year. Descriptive statistics were used to describe all episodes' characteristics. Continuous variables are presented as medians and quartiles (Q1; Q3). Categorical variables are described with absolute (N) and		

		(d) <i>Cohort study</i> - If applicable, explain how loss to follow-up was addressed <i>Case-control study</i> - If applicable, explain how matching of cases and controls was addressed <i>Cross-sectional study</i> - If applicable, describe analytical methods taking account of sampling strategy (e) Describe any sensitivity analyses	relative (%) frequencies. Moreover, the Mann–Whitney U and Chi-squared tests were performed to establish comparisons. All analyses were two-tailed, and a significance level of 0.05 was considered. Statistical analyses were performed using IBM SPSS Statistics® v 28.0.1.0 for Windows." (b) Page 5: To compute readmissions an anonymous patient identification approach was conducted by cross-referencing three variables as follows: sex, birth date, and place of residence, like done in previous studies [40,41]. (c) Page 6: "The database used in this study contains anonymized administrative data, diagnoses, and procedures from all hospitalisations registered in Portuguese mainland public hospitals. Inpatient episodes (≥24 h duration) from 2000 to 2015 were analysed. (everything was included, missing data included in the limitations).". (d) N/A (e) N/A		
Data access and cleaning methods	..	Page 6: "The database used in this study contains anonymized administrative data, diagnoses, and procedures from all hospitalisations registered in Portuguese mainland public hospitals. Inpatient episodes (≥24 h duration) from 2000 to 2015 were analysed."	RECORD 12.1: Authors should describe the extent to which the investigators had access to the database population used to create the study population. RECORD 12.2: Authors should provide information on the data cleaning methods used in the study.	RECORD 12.1: Page 5: The ACSS provided the dataset used in this study, which contains administrative records in an anonymized form, and approved its use for research purposes. No primary data were collected as part of the present study. Being an anonymized secondary dataset analysis, no written informed consent was pursued. Data were analysed under data	

				security and privacy policies. RECORD 12.2: Page 6: The database used in this study contains anonymized administrative data, diagnoses, and procedures from all hospitalisations registered in Portuguese mainland public hospitals. Inpatient episodes (≥ 24 h duration) from 2000 to 2015 were analysed.”
Linkage	..		RECORD 12.3: State whether the study included person-level, institutional-level, or other data linkage across two or more databases. The methods of linkage and methods of linkage quality evaluation should be provided.	Page 6: There were no data linkages between other databases other than the one previously described.
Results				
Participants	13	(a) Report the numbers of individuals at each stage of the study (<i>e.g.</i> , numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed) (b) Give reasons for non-participation at each stage. (c) Consider use of a flow diagram	(a) Page 6: "Between 2000 and 2015, a total of 18,161 hospitalisations with a primary diagnosis of burns were registered. RECORD 13.1: Describe in detail the selection of the persons included in the study (<i>i.e.</i> , study population selection) including filtering based on data quality, data availability and linkage. The selection of included persons can be described in the text and/or by means of the study flow diagram.	RECORD 13.1: Page 6: "Between 2000 and 2015, a total of 18,161 hospitalisations with a primary diagnosis of burns were registered.
Descriptive data	14	(a) Give characteristics of study participants (<i>e.g.</i> , demographic, clinical, social) and information on exposures and potential confounders	Page 7: "Most episodes were among male patients (57.8%), while females accounted for 42.2% of cases. The median age of hospitalised burn patients was 50.0 years (36.0; 69.0). The median length of stay (LoS) for	

		(b) Indicate the number of participants with missing data for each variable of interest (c) <i>Cohort study</i> - summarise follow-up time (e.g., average and total amount)	all episodes was 11.0 days (4.0; 23.0). Regarding discharge status, a total of 13,908 (76.6%) episodes resulted in home discharge, whereas 2898 (16.0%) were transferred to another hospital or inpatient facility. Additionally, 231 (1.3%) patients left against medical advice. When it comes to mortality, 1011 (5.6%) patients died during hospitalisation." Page 7: "Regarding burn aetiology, fire/flames were the most frequent cause, accounting for 39.7% of cases, followed by hot liquid/object burns (29.4%). Electrical burns and chemical burns were less common, with 6.1% and 6.0% of cases, respectively, while scalds were the least prevalent burn aetiology (3.5%)."		
Outcome data	15	<i>Cohort study</i> - Report numbers of outcome events or summary measures over time <i>Case-control study</i> - Report numbers in each exposure category, or summary measures of exposure <i>Cross-sectional study</i> - Report numbers of outcome events or summary measures	Page 7: "Hospitalisation length was significantly longer for patients with a mental disorder, with a median length of stay of 18.0 days compared to 10.0 days in those without a registered mental disorder ($P<0.001$). Mortality was also significantly higher in the group with a mental disorder (7.9% vs. 5.2%, $P<0.001$)." Page 8: "Readmissions during the study period were higher among patients with a registered mental health disorder. Of the 18,161 burn hospitalisations, 195 (8.4%) involved patients with psychiatric comorbidities who were readmitted, compared to 1043 (6.6%) readmissions among patients without psychiatric disorders ($P=0.002$)."		

			Page 6: "Regarding burn severity, 384 (19.1%) of psychiatric patients had burns covering $\geq 20\%$ TBSA, compared to 1966 (15.7%) in patients without a psychiatric disorder ($P<0.001$)."		
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (e.g., 95% confidence interval). Make clear which confounders were adjusted for and why they were included (b) Report category boundaries when continuous variables were categorized (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	Page 7: Hospitalisation length was significantly longer for patients with a mental disorder, with a median length of stay of 18.0 days compared to 10.0 days in those without a registered mental disorder ($P<0.001$). Mortality was also significantly higher in the group with a mental disorder (7.9% vs. 5.2%, $P<0.001$). Page 8: Burn severity was also greater among patients with a psychiatric disorder, with a higher percentage of cases involving $\geq 20\%$ TBSA (19.1% vs. 15.7%, $P<0.001$). Page 9: Regarding in-hospital mortality (IHM), higher mortality rates were observed in patients with delirium, dementia, and amnesic disorders (14.0%, $P<0.001$) and alcohol-related disorders (10.9%, $P<0.001$). In contrast, patients with mood disorders had significantly lower mortality rates (3.4%, $P=0.019$).		
Other analyses	17	Report other analyses done—e.g., analyses of subgroups and interactions, and sensitivity analyses	-		
Discussion					
Key results	18	Summarise key results with reference to study objectives	Page 11: "This study employed an observational, retrospective design to examine the relationship between		

			psychiatric disorders and burn injuries in Portugal over a 16-year period, utilizing a nationwide dataset. It investigated how psychiatric comorbidity influences burn characteristics and various hospital outcomes. These findings contribute to the growing body of evidence highlighting the complex bidirectional relationship between mental health disorders and burn injuries." Page 11: "Among 18,161 inpatient episodes with a primary diagnosis of burns, 2335 cases (12.9%) had a documented psychiatric disorder. Direct comparisons with other studies are challenging due to the limited and heterogeneous nature of existing research on psychiatric comorbidity in burn inpatients. However, this proportion aligns with a previous retrospective study [9], further emphasizing the well-documented association between psychiatric illness and burn risk." Page 11: "Among both patients with and without psychiatric comorbidity, fire/flame burns were the predominant cause (46.9% and 38.6%, respectively). There is a scarcity of literature on burn aetiology among inpatients with psychiatric disorders, making this one of the first analyses to explore such associations. Nevertheless, the observed differences in aetiology align closely with trends seen in burn patients without psychiatric disorders [6]. However, fire/flame burns were significantly		
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			more prevalent in patients with psychiatric comorbidity ($P<0.001$), while all other burn aetiologies were significantly less common in this group." Page 13: "A key finding of this study is that patients with psychiatric comorbidity sustained more severe burns, with 19.1% of cases involving $\geq 20\%$ total body surface area (TBSA), compared to 15.7% in the group of patients without psychiatric comorbidity. While some studies suggest no significant difference in burn severity between these groups [15,21,22], others report increased severity in the group of inpatients with psychiatric comorbidity [17,19]." Page 13: "In line with the greater severity of burns, in-hospital mortality was higher among psychiatric patients (7.9%) compared to patients without psychiatric comorbidity (5.2%), consistent with previous studies [9,46]. However, the magnitude of this association may be underestimated for several reasons. Psychiatric conditions may be underreported in burn patients, as demonstrated in a study on surgical patients [47]." Page 14: "Despite being relatively rare (0.8% of cases), self-inflicted burns were disproportionately represented among psychiatric patients (62.4%). Interestingly, psychiatric patients with self-inflicted burns had lower in-hospital mortality (14.0% vs. 39.3% self-inflicted cases	
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			in patients without psychiatric comorbidity). This paradoxical finding contradicts expectations, as self-inflicted burns are typically associated with higher fatality rates [26–30]." Page 15: "Psychiatric burn patients had significantly longer hospital stays, with a median of 18 days compared to 10 days in the group of patients without psychiatric comorbidity ($P < 0.001$), consistent with prior studies [10,46,52]. Several factors contribute to this prolonged hospitalisation. Psychiatric patients may be more susceptible to post-burn complications, such as infections, increasing their need for extended care [9]." Page 16: "In addition to longer hospital stays, patients with psychiatric comorbidity in our study had significantly higher readmission rates (8.4% vs. 6.6%, $P = 0.002$). This aligns with existing literature demonstrating increased readmission rates among patients with psychiatric disorders [54]."		
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Page 19: "One major limitation is the potential underreporting of psychiatric disorders, especially in patients with severe burns, due to altered consciousness or the inability to undergo psychiatric evaluation. This could lead to misclassification bias, where some patients in the group without psychiatric comorbidity have undiagnosed psychiatric conditions, thereby underestimating the true	RECORD 19.1: Discuss the implications of using data that were not created or collected to answer the specific research question(s). Include discussion of misclassification bias, unmeasured confounding, missing data, and changing eligibility over time, as they pertain to the study being reported.	Page 19: "One major limitation is the potential underreporting of psychiatric disorders, especially in patients with severe burns, due to altered consciousness or the inability to undergo psychiatric evaluation. This could lead to misclassification bias, where some patients in the group without psychiatric comorbidity

			impact of mental health disorders on burn outcomes." Page 19: "This study also has the potential for survivor bias. Patients who succumb to their burns before reaching healthcare services are not included in the dataset, which may lead to an underestimation of in-hospital mortality." Page 19: "Additionally, causality cannot be inferred due to the observational and retrospective nature of the study. While associations between psychiatric disorders and burn severity, aetiology, and outcomes are well documented, this design does not allow for conclusions regarding direct causation." Page 19: "Another important limitation is the lack of outpatient data, as the study focuses exclusively on inpatients. This may affect the generalizability of findings to less severe burn cases, particularly those treated in outpatient settings."	have undiagnosed psychiatric conditions, thereby underestimating the true impact of mental health disorders on burn outcomes." Page 19: "Additionally, psychiatric disorders were identified in this study only if they were registered in hospital records, meaning milder or undiagnosed conditions may have gone unnoticed." Page 19: "Another important limitation is the lack of outpatient data, as the study focuses exclusively on inpatients. This may affect the generalizability of findings to less severe burn cases, particularly those treated in outpatient settings." Page 19: "Additionally, causality cannot be inferred due to the observational and retrospective nature of the study. While associations between psychiatric disorders and burn severity, aetiology, and outcomes are well documented, this design does not allow for conclusions regarding direct causation." Page 19: "Furthermore, while the study identifies associations between specific psychiatric disorders and burn outcomes, it does not account for the severity or duration of psychiatric
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				illness, nor does it include information on medication use, which could influence injury risk (e.g., sedation increasing vulnerability to burns)." Page 19: "Another consideration is the difficulty in comparing TBSA between patients with and without psychiatric comorbidity. There may be a systematic underreporting of burn extent in without psychiatric comorbidity patients, especially those with smaller burns, which could affect comparisons of severity and mortality."
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Page 20: "This study highlights the significant impact of psychiatric disorders on burn characteristics, severity, and outcomes, demonstrating that psychiatric inpatients experience higher burn severity, longer hospital stays, and increased mortality. Fire/flame burns and trunk injuries were more common in this group, with schizophrenia, substance use disorders, and anxiety disorders particularly associated with severe burns. Despite lower burn severity, self-inflicted injuries in psychiatric patients resulted in prolonged hospital stays, reinforcing the need for multidisciplinary care." Page 20: "While underreporting of psychiatric conditions and the retrospective design pose limitations, these findings emphasize the need for early psychiatric screening, targeted	

			prevention strategies, and integrated burn-psychiatry management. Future research should explore preventive interventions and the role of psychiatric treatment in improving burn outcomes, ultimately enhancing care for this vulnerable population."		
Generalisability	21	Discuss the generalisability (external validity) of the study results	Page 19: "Another important limitation is the lack of outpatient data, as the study focuses exclusively on inpatients. This may affect the generalizability of findings to less severe burn cases, particularly those treated in outpatient settings." Page 19: "Additionally, each psychiatric disorder is compared against the rest of the burn patient population, which allows for the specific highlighting of individual disorders. However, this approach may introduce confounding, as the comparison group includes patients with other psychiatric conditions." Page 19: "Finally, socioeconomic factors and access to healthcare were not directly analysed, though they likely play an important role in both burn incidence and recovery outcomes."		
Other Information					
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	N/A		
Accessibility of protocol, raw data,		..		RECORD 22.1: Authors should provide information on how to	N/A

and programming code			access any supplemental information such as the study protocol, raw data, or programming code.	

*Reference: Benchimol EI, Smeeth L, Guttman A, Harron K, Moher D, Petersen I, Sørensen HT, von Elm E, Langan SM, the RECORD Working Committee. The REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) Statement. *PloS Medicine* 2015; in press.

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Guide for authors

Introduction

- Introduction
- Submission of papers
- Types of paper
- Contact details for submission
- Submission checklist

Before you begin

- Ethics in publishing
- Studies in humans and animals
- Informed consent and patient details
- Declaration of interest
- Declaration of generative AI in scientific writing
- Submission declaration and verification
- Use of inclusive language
- Reporting sex- and gender-based analyses
- Contributors
- Authorship
- Changes to authorship
- Reporting clinical trials
- Article transfer service
- Copyright
- Responsible sharing
- Funding source
- Open access
- Language
- Submission
- Submit your article
- Suggesting reviewers

Preparation

- Use of word processing software
- LaTeX
- Article structure
- Sections
- Introduction
- Material and methods
- Theory/calculation
- Results
- Discussion
- Conclusions
- Appendices
- Essential title page information
- Highlights
- Abstract
- Graphical abstract

- Keywords
- Abbreviations
- Acknowledgements
- Formatting of funding sources
- Nomenclature and units
- Math formulae
- Footnotes
- Artwork
- Electronic artwork
- Color artwork
- Figure captions
- Tables
- References
- Citation in text
- Reference links
- Web references
- Data references
- Preprint references
- References in a special issue
- Reference management software
- Reference style
- Journal abbreviations
- Video
- Supplementary material
- Additional information

After acceptance

- Proofs
- Offprints
- Additional information

Author inquiries

- Author Inquiries

Introduction

Introduction

Burns aims to foster the exchange of information among all engaged in preventing and treating the effects of burns. The journal focuses on clinical, scientific and social aspects of these injuries and covers the prevention of the injury, the epidemiology of such injuries and all aspects of treatment including development of new techniques and technologies and verification of existing ones. Regular features include clinical and scientific papers, state of the art reviews and descriptions of burn-care in practice.

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