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Covid-19 pandemic has increased the incidence of self-inflicted burn injuries

Due to its high transmission rate and higher lethality, when compared to other common respiratory syndromes, the new coronavirus pandemic has led to the introduction of strong restrictive measures worldwide. Public health behaviors such as social distance emerged as important acts to reduce the spread of the virus, having a substantial effect on the world economy and a significant impact on freedom of movement [1,2]. These stressful events, causing sudden changes in the individual's life functioning, can significantly affect mental health [3]. It can lead to the development or exacerbation of symptoms in particular depression and anxiety in vulnerable populations, including individuals with pre-existing psychiatric disorders and people unable to develop adequate coping measures [1,4].

The feeling of abandonment, financial instability, fear of contagion, loss of access to basic and mental health support, reduction of social activities, and impoverished living conditions reflected in an increased incidence of stress, anxiety, depression, insomnia, drug addiction, self-mutilation, and suicides observed in the same period [3,5].

A study carried out at the Burn Unit from the Ribeirão Preto Medical School, University of São Paulo, Brazil, from December 2019 to June 2020, showed an increase in self-inflicted burn injuries in the pandemic period in the region of Ribeirão Preto, São Paulo, Brazil. There were 54 new admissions (20 in the pre-pandemic period and 34 at the beginning of the pandemic) at our Burn Unit during the study period, with 37 male patients (68.5%) and 17 females (31.5%). The mean age of these patients was 32.7 years old in the pre-pandemic period (from 1 to 74 years), and 30.5 in the pandemic period (from 1 to 70 years). The mean total body surface area (TBSA) burned in the pre-pandemic period was 10.99% (from 1 to 65%), and 12.4% in the pandemic period (from 1 to 47%). History of psychiatric illness was present in four patients (20%) in the pre-pandemic period, and in six patients (17.6%) in the pandemic period. The most prevalent agents were flammable liquids (55.6%), and the main mechanism was flame burn (68.5%) overall. Before the pandemic period, there had been no admission for a self-inflicted burn. However, after the outset of the Covid-19 pandemic, seven patients (21.2%) had a self-inflicted burn trauma due to a suicide attempt. These rates observed in both periods (before and during the beginning of the pandemic) showed a statistically significant difference ($p = 0.035$) according to Fisher's statistical test.

Analyzing this subgroup who self-inflicted burn, it was found that five patients (71.4%) were female and two (28.6%) were male, six patients (85.7%) had psychiatric diseases, and four patients (57.15%) reported drug addiction. The mean age was 39 years old (from 21 to 63 years) and the mean TBSA burned was 20.36% (from 4% to 47%). Regarding the agent, three patients (42.85%) used ethyl alcohol, three (42.85%) used gasoline, and one (14.3%), acetone. All patients had a flame as a burn mechanism and required a surgical approach. The most prevalent complication was wound

infection in three patients (42.85%) and pneumonia associated with mechanical ventilation in two patients (28.6%). One patient (14.3%) had an unfavorable evolution and died.

Since the beginning of the coronavirus pandemic, our Burn Unit has also experienced an outbreak of Covid-19 and its impact on the health system [6]. In addition, we noted that physical distancing measures (such as quarantine) collaborated to increase the incidence of ethyl alcohol burns [7].

In the present study, most patients (85.7% — six in seven patients) in the pandemic period who self-inflicted burns had some previous psychiatric illness (compared to none of the other 27 patients with unintentional burns in the same period). Factors like gender, mood disorders, drug addiction, personality disorders, depression, and schizophrenia are the most prevalent [8]. These individuals generally come from lower social classes, with poor social and family support. It seems that the pandemic, being an acute predisposing factor, works to enhance these events [9].

Intentional self-injuries represent a significant medical problem worldwide [10]. Self-inflicted burns tend to be greater in terms of extent and depth, and they have been associated with a significantly increased risk of mortality during admission and clinical evolution of the patient [9]. Considering the great psychological impact related to the Covid-19 pandemic on individuals, there is a need for extensive mental health support during this period.

Conflict of interest

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REFERENCES

- [1] Hao F, Tan W, Jiang L, Zhang L, Zhao X, Zou Y, et al. Do psychiatric patients experience more psychiatric symptoms during COVID-19 pandemic and lockdown? A case-control study with service and research implications for immunopsychiatry. *Brain Behav Immun* 2020;87:100–6, doi:<http://dx.doi.org/10.1016/j.bbi.2020.04.069>.
- [2] Kawohl W, Nordt C. COVID-19, unemployment, and suicide. *Lancet Psychiatry* 2020;7(May (5)):389–90, doi:[http://dx.doi.org/10.1016/S2215-0366\(20\)30141-3](http://dx.doi.org/10.1016/S2215-0366(20)30141-3).
- [3] Dsouza DD, Quadros S, Hyderabadwala ZJ, Mamun MA. Aggregated COVID-19 suicide incidences in India: fear of

COVID-19 infection is the prominent causative factor.

Psychiatry Res 2020;290:113145, doi:<http://dx.doi.org/10.1016/j.psychres.2020.113145>.

- [4] Holmes EA, O'Connor RC, Perry VH, Tracey I, Wessely S, Arseneault L, et al. Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *Lancet Psychiatry* 2020;7(6):547–60, doi:[http://dx.doi.org/10.1016/S2215-0366\(20\)30168-1](http://dx.doi.org/10.1016/S2215-0366(20)30168-1).
- [5] Sher L. The impact of the COVID-19 pandemic on suicide rates. *QJM* 2020;113(October (10)):707–12, doi:<http://dx.doi.org/10.1093/qjmed/hcaa202>.
- [6] Almeida JB, Paiva SAA, Coltro PS, Farina Junior JA. An outbreak of Covid-19 in a Burn Unit: the impact on the health system and management strategies for infected patients. *J Plast Reconstr Aesthet Surg* 2021;74(3):644–710, doi:<http://dx.doi.org/10.1016/j.bjps.2020.12.026>.
- [7] Hohl DH, Coltro PS, Silva GMA, Silveira VG, Farina Junior JA. Covid -19 quarantine has increased the incidence of ethyl alcohol burns. *Burns* 2021;47(Aug. (5)):1212, doi:<http://dx.doi.org/10.1016/j.burns.2020.05.025>.
- [8] Mushin OP, Esquenazi MD, Ayazi S, Craig C, Bell DE. Self-inflicted burn injuries: etiologies, risk factors and impact on institutional resources. *Burns* 2019;45(1):213–9, doi:<http://dx.doi.org/10.1016/j.burns.2017.07.016>.
- [9] Kumar S, Singh US, Verma AK, Ali W, Krishna A. Intentional and non-intentional burn related deaths: a comparative study of socio-demographic profile. *Burns* 2015;41(2):265–70, doi:<http://dx.doi.org/10.1016/j.burns.2014.06.006>.
- [10] Dobson H, Lee S, Bredon C, Cleland H, Moncur D, Kulkarni J. How self-inflicted injury and gender impacted the outcome following a severe burn. *Burns* 2019;45(3):621–6, doi:<http://dx.doi.org/10.1016/j.burns.2018.10.021>.

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Something should be done for burn mass casualty incidents



Dear Editor,

A burn mass casualty incident defined by the American Burn Association (ABA) as “any catastrophic event in which the number of burn victims exceeds the capacity of the local burn center to provide optimal burn care” [1]. Today, burn mass casualty incidents are frequently seen all over the world, and will continue to be seen. Ongoing wars and terrorist attacks, along with several indoor fires, have shown that preparedness for such events is optimal to deliver care for every region of each country.

Rapid and appropriate evacuation of patients from the scene of a burn mass casualty incident is one of the most important parts. After evacuation is achieved, quick and appropriate triage is vital, as overtriage results in unnecessary transfer and undertriage results in patients not receiving indicated treatments. Currently, use of the ABA's resource triage diagram during any burn mass casualty incident is recommended [1].

At August 2021, a liquid petroleum gas tanker exploded in Lebanon. Local health authorities planned to transfer five patients to Turkey immediately, however, this was done after 72 h. One of the patients died in the plane just before departure.

One of the patients was intubated (intubation indication was mentioned as agitation) and had a burned total body surface area (TBSA) of 95% that was all third degree, and died 24 h after admission to our center. Third patient has 70% of burned TBSA and also had cranial trauma, he also died in 48 h after admission. All four patients referred to our center had acute renal failure. It was observed that no reference algorithm was used during the triage and transfer.

In the past, we experienced burn mass casualty incidents in Turkey with devastating outcomes. However, after settling our national burn treatment algorithm and guideline (published at 2015) which was based on the national facilities, outcomes improved [2]. According to this guideline, transportation is not a priority for a patient for whom mortality is expected. At a recent burn mass casualty incident in Diyarbakir, Turkey, of the 89 patients burned in two co-located passenger coaches, no transferred patient died in first 72 h after the incident.

The question is not whether such disasters will happen but when they will happen and how to cope. Preparedness requires plans, and it requires staff, stuff, and structure (the three Ss). Plans include international disaster plans, national disaster