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Increased self-immolation frequency and severity during the COVID-19 pandemic

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ABSTRACT

Objective: To determine whether the increased restrictions, isolation and stressors associated with COVID-19 led to an increase in rates or severity of self-immolation burn injuries.
Design: Retrospective review of a prospectively-collected database of New South Wales burn patients, comparing 2020 data with the preceding 5 years.
Setting: Both adult units in the New South Wales Statewide Burn Injury Service (Concord Repatriation General Hospital and Royal North Shore Hospital).
Participants: All adult patients in New South Wales with self-inflicted burn injuries between 1st January 2015 and 31st December 2020.
Outcome measures: Demographic information, precipitating factors, burn severity, morbidity and mortality outcomes.
Results: We found18 episodes of self-immolation in 2020, compared to an average of 10 per year previously. Burn size significantly increased (43% total body surface area vs 28%) as did revised Baux score (92 vs 77). Most patients had a pre-existing psychiatric illness. Family conflict and acute psychiatric illness were the most common precipitating factors.
Conclusion: 2020 saw an increase in both the frequency and severity of self-inflicted burn injuries in New South Wales, with psychiatric illness a major factor.

1. Introduction

Self-immolation, a form of self-harm involving setting oneself on fire, is a rare but confronting cause of suicide. Early mortality rates are high, and survivors face long hospitalisations, permanent disability and disfigurement, and high delayed mortality [1–3]. Although numerous causative factors exist, three main patterns have emerged with varying geographical and cultural incidence [4]. In high-income countries, where

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self-immolation represents < 1% of suicides, it occurs most frequently in middle-aged men with an existing psychiatric illness. Self-immolation is also used as a form of religious or political protest (eg. Buddhist persecution, or the 2010 Arab Spring), but again this is uncommon. Self-immolation is a much more common form of suicide (40–70%) amongst young, socioeconomically disadvantaged married women in certain Middle Eastern and South Asian countries.

The COVID-19 pandemic represents perhaps the most significant global event of recent times, with widespread health, economic, social and political concerns. It is recognised that numerous risk factors for psychiatric morbidity have increased during the pandemic, including unemployment, social isolation, drug and alcohol use and domestic violence [5,6]. Simultaneously, the increased demand on health services and attempts to limit physical contact have reduced the ability of mental health support services to meet this increased need.

This study aims to examine whether this 'perfect storm' of heightened stressors and decreased services led to an increase in the incidence and severity of self-immolation injuries.

2. Methods

This is a retrospective review of the Agency for Clinical Innovation Statewide Burn Injury Service Registry, a prospectively collected database of all burns treated by the New South Wales burns units. The study received ethics approval from the North Sydney Local Health District institutional review board, with a waiver of consent obtained as the registry data was already collected via an opt-out consent process.

Patients who had presented to either of the two adult burn centres in NSW between 1st January 2015 and 31st December 2020 with burn injury caused by self-harm were selected from the registry. Patients with minor burns that did not fit the definition of self-immolation (eg. self-harm by contact with a cigarette lighter) were excluded from analysis.

Incidence of self-immolation was compared graphically year to year. For further statistical analysis, patients were stratified into two groups: 'pre-COVID' (2015–2019) and 'post-COVID' (2020). Data collected included patient demographics, details of the burn injury, and clinical outcomes. Continuous variables were analysed using unpaired t-tests and categorical variables were analysed using Chi-squared tests, with statistical significance set at $p < 0.05$.

3. Results

68 patients presented to NSW adult burn centres after self-immolation during the study period: 50 patients in the pre-COVID 5 year period, and 18 patients in 2020 (post-COVID) [Fig. 1]. This represents a 50% increase on the average of 10 cases per year, although this finding did not demonstrate statistical significance ($p = 0.08$). Demographic data was similar for patients in both pre-COVID and post-COVID groups [Table 1].

Burn severity was increased in the post-COVID group [Table 2, Fig. 2], with statistically significant increases in mean Total Body Surface Area burned (43% vs 28%) and revised Baux score (92 vs 77). There was a trend towards increased mortality rates post-COVID, although numbers were low and this did not reach statistical significance. Use of intubation and escharotomy were similar, and overall length of stay was unchanged.

Most patients burned themselves at home (70%) both pre- and post-COVID. Numerous precipitating stressors were identified, with family/spouse conflict and acute psychosis the most common [Fig. 3]. Although the incidence of a pre-existing psychiatric illness was common in both groups, this did not impact on burn severity or outcome on subgroup analysis.

4. Discussion

2020 saw a dramatic increase in both the frequency and severity of self-immolation presentations in New South Wales. This follows a modest but steady decline in presentations in the previous years, the cause of which is outside the scope of this paper. Although it is difficult to confidently attribute the 2020 increase solely to the COVID-19 pandemic, several factors make this a likely culprit. Existing research reports an increase in mental illness generally during COVID-19 [6], including a 10% increase in ambulance attendances for self-harm incidents in New South Wales [7], which is in line with similar findings during other major international events such

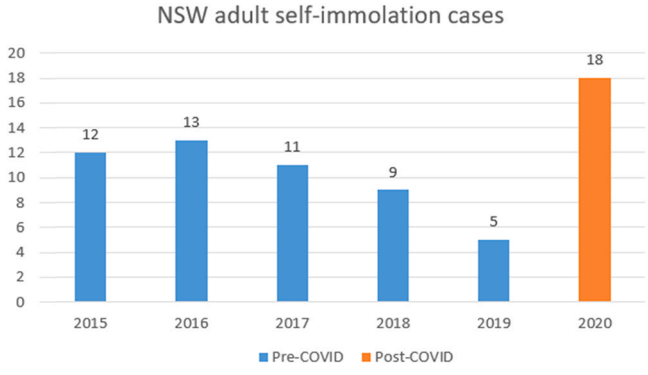

Fig. 1 – Frequency of self-immolation presentations by year.

Table 1 – Patient demographics.

	Pre-COVID	Post-COVID	p-value
Age (mean)	45	46	0.17
Male gender	38 (76%)	11 (61%)	0.48
Rural/remote	12 (24%)	7 (39%)	0.19
Unemployed	22 (44%)	8 (44%)	0.97
Previous psychiatric history	33 (66%)	13 (78%)	0.72
Previous psychiatric admission	21 (42%)	6 (33%)	0.20

Table 2 – Burn severity and outcomes.

	Pre-COVID	Post-COVID	p-value
Total Body Surface Area	mean 28% (range 1–98%)	mean 43% (range 5–98%)	0.03*
Revised Baux score	mean 77	mean 92	0.04*
Intubation	37 (74%)	13 (72%)	0.16
Escharotomy	11 (22%)	5 (27%)	0.07
Mortality	9 (18%)	5 (27%)	0.25
Early palliation	6 (12%)	4 (22%)	0.21
Length of stay (mean) – patients who survived	44 days	47 days	0.38

* Statistical significance.

as the 2003 SARS epidemic [8] and the 2008 global financial crisis [9].

Many of the known risk factors for self-harm [10] – relationship problems, unemployment, financial insecurity, loneliness and social isolation, drug and alcohol abuse, hopelessness – were exacerbated by the pandemic and its increased restrictions. Although only one of the 18 patients who self-immolated in 2020 directly cited COVID-19 as a precipitating factor (self-isolation from family and friends), the association between the pandemic and these risk factors suggest a link. Furthermore, family and relationship conflicts (eg. an argument with a spouse) were a more common cause of self-immolation presentations in the post-COVID period, mirroring the documented increase in domestic violence events during the pandemic [11].

The impact of existing mental illness cannot be downplayed. 90% of patients who commit suicide have a diagnosable psychiatric disorder [12], with most patients in our series having a pre-existing diagnosis, and an acute psychotic episode being the second most common identified precipitant. This was perhaps due not only to the aforementioned stressors, but also to difficulty with accessing mental health services at a time when the healthcare system was overburdened and face-to-face assessment and treatment was limited – at our institutions, for example, outpatient psychiatric services moved almost exclusively to remote consultations.

Changes in the pattern of alcohol and drug use, and their impact on our findings, are complex. The overall level of consumption in Australia during the pandemic did not change, although there was significant individual variation, with 20% and 17% of survey respondents reporting an increase in alcohol and illicit drug use respectively, and 27% and 26% reporting a decrease [13]. It would be interesting to know whether there was a correlation between those with increased consumption and mental health issues.

An interesting finding was that despite a near doubling of the mean TBSA of these patients, the mean length of stay remained relatively unchanged. Although there was a trend towards increased length of stay with higher TBSA [Fig. 4], the wide range of TBSA in both pre- and post-COVID groups meant that this did not alter the statistical significance.

The findings of our study highlight the impacts that a significant global crisis can have on the health and wellbeing of the population. Any policy implemented with the aim of minimising the health impact of COVID-19 needs to also

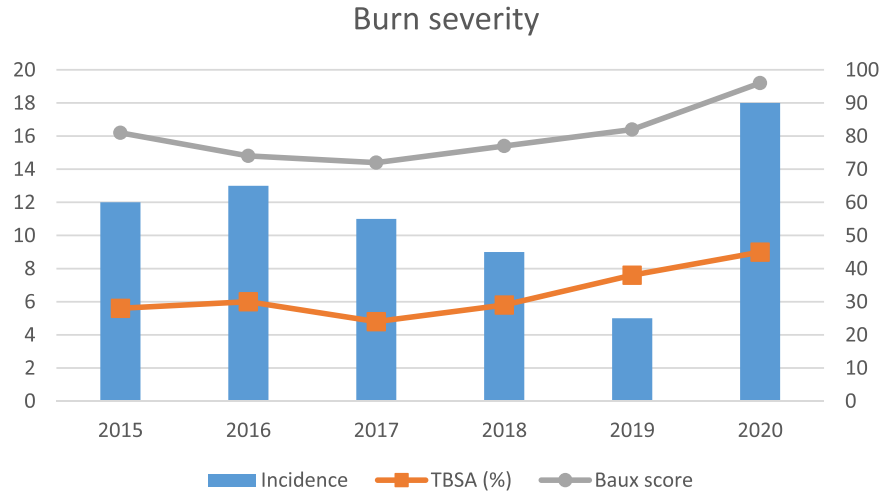

Fig. 2 – Severity of self-immolation presentations by year.

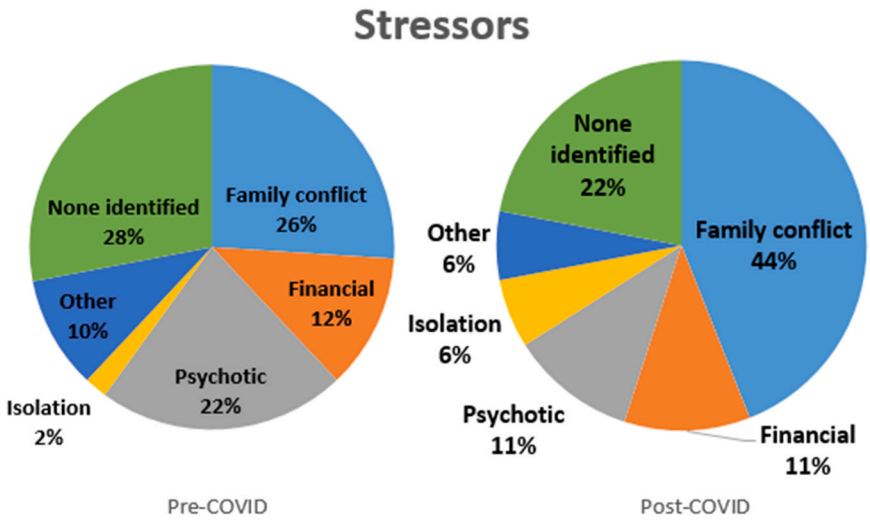

Fig. 3 – breakdown of stressors precipitation self-immolation events.

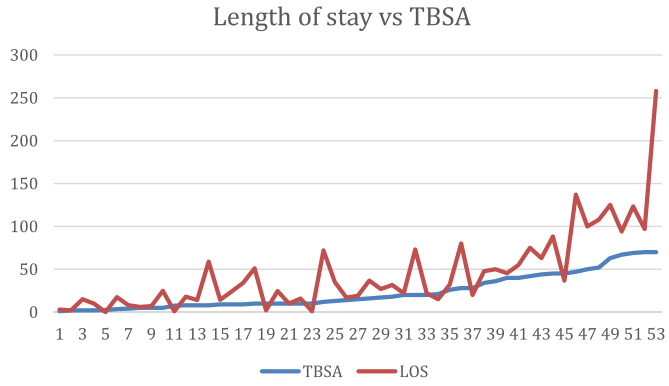

Fig. 4 – comparison of length of inpatient stay compared to TBSA (for patients who survived).

carefully assess the potential impact on other areas of health, and aim to mitigate these impacts where possible.

The strengths of our study include its completeness – all major burns in New South Wales are recorded in our database due to the statewide nature of the Burn Injury Service. This strength could be expanded on further by performing similar studies in the other Australian states, which could provide an interesting insight given the varying intensity and duration of "lockdowns" around the country.

Limitations include limited detail available on the cause of self-immolation for some patients (particularly those who did not survive), and the heterogeneity of burn severity, which due to the (thankfully) relatively low numbers limited the statistical power of the analysis. Furthermore, as this database only includes patients presenting to hospital, those who are deceased at the scene are excluded.

5. Conclusion

In line with previous research on the mental health impact of the COVID-19 pandemic, New South Wales saw an increase in the severity of self-immolation presentations. The healthcare burden of these burn injuries is high. Most patients had a pre-existing psychiatric illness, highlighting the need for health policy designed to keep us safe from COVID-19 while also ensuring that services for non-COVID conditions continue to be provided.

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Contribution

Drs Jackson, Jung, Karunaratne and Mackenzie contributed to the study planning, literature review, data collection/analysis and manuscript draft preparation. Drs Gillies and O'Hara contributed to study planning, supervised the project and helped to edit and refine the final manuscript.

Declarations of interest

None.

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