Original paper

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Demographic and clinical characteristics of patients with burns referred for psychiatric assessment to a tertiary care hospital in Sri Lanka

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Abstract

Introduction

Burns are associated with significant psychological morbidity. The relationship between burns and psychiatric conditions is bidirectional. There are hardly any Sri Lankan studies describing psychological morbidity among adults with burns.

Aims

To describe the psychological morbidity and associated factors in patients with burn injuries referred to the University Psychiatry Unit, National Hospital of Sri Lanka.

Methods

A retrospective record-based study was carried out by extracting demographic and clinical data from records of all patients with burns, referred for psychiatric assessment to the University Psychiatry Unit, for two years from 1st January 2018 onwards. Associations were explored using the chi-square test.

Results

Eighty-seven records were analysed; 56.3% were females. The mean age was 37.8 years (SD=15.8). The mean burn surface area was 36.2% (SD=16.6). The cause of the burn was accidental in 55%, self-inflicted in 31% and homicidal in 3.4%. Among all patients with burns, a past diagnosis of mental illness was detected in 35.6% (95% CI 25.6-46.6), substance use in 11.5%, and personality disorders in 10.3%. Current psychiatric morbidity after burn injury was diagnosed in 59.8% (95% CI 48.7-70.1), the most frequent being depressive disorder (32.2%), followed by adjustment disorder (16.1%) and delirium (6.9%). Female gender, being aged <30 years and a history of psychiatric illness were significantly associated with self-inflicted burns.

Conclusions

Burn injuries were associated with psychological morbidity, particularly depression.

Key words: burns, accidental, self-inflicted, mental illnesses

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Introduction

The mortality and disability caused by burn injuries have been halved over the last 50 years, with advancements of surgical and medical management (1). The relationship between burns and psychiatric morbidity is bidirectional. Burns can be associated with psychiatric morbidity due to the pain caused by the burn, its treatment, as well as associated disability and disfigurement (2,3). Severe metabolic derangements and infection in the aftermath of a burn can lead to delirium (4). The trauma in the acute stage can lead to acute stress disorders and later post traumatic stress disorder (4). Psychiatric morbidity on the other hand is known to be associated with increased risk of burns (4). Not only psychiatric illness, but also the use of psychotropic medications itself may indirectly increase the risk of burns, due to their sedative effect (5). Psychological distress during the hospital stay has been significantly associated with greater physical disability at one year after the burn injury (6,7). Therefore, early identification and treatment of psychiatric illness in burn patients is imperative to help patients return to a satisfactory functional level with minimal delay.

There are only a very few Sri Lankan studies describing the findings of psychiatric assessments in patients with burns. Three of the previous studies originated from the Eastern province, where a high prevalence of self-immolation has been identified (8,9,10). Two cross sectional studies conducted amongst burn patients admitted for treatment at Teaching Hospital, Batticaloa described associated demographic factors, types and outcomes of treatment (8,9). A prospective study from the same setting compared patients who presented with self-inflicted burns with accidental burns (10). Another study conducted in the coroner's court in Colombo studied suicidal deaths due to burns over a two-year duration (11). All these studies had observed that a high proportion of burns were due to self-inflicted burns in females, triggered by interpersonal conflict.

Sri Lanka still records a relatively high rate of suicides (12). It is therefore important to explore associations between burns and psychiatric illness, as this has implications for identification of persons at risk of repetition of self-inflicted burns, and the long-term outcome. This study aimed to describe the demographic features and clinical characteristics related to burns and psychiatric morbidity among a group of inpatients on treatment for burns, who had been referred for psychiatric assessment.

Methods

A retrospective record-based study was carried out, examining the clinic records of all patients with burn injuries referred for psychiatric assessment to the University Psychiatry Unit of the National Hospital, Sri Lanka (NHSL) over a two-year period from 1st January 2018 to 31st December 2019. Patients were referred from the male and female Burns Units of the NHSL. The Burns Unit had a total of 259 admissions during 2019. All patients suspected to have psychological disturbances and who were medically stable were referred to the Psychiatry Unit for further evaluation and management. Critically ill patients were not referred in the acute stage, but were seen once medically stable. All self-inflicted burns according to patient reports and collateral information were referred for psychiatric assessment by the Burns Unit. The clinic records of patients maintained by medical officers and postgraduate trainees were used to collect demographic and clinical details, using a pre-designed questionnaire.

Patients who had been diagnosed with a psychiatric disorder or who gave a history of suffering from symptoms suggestive of a psychiatric disorder prior to the burn were categorised as having a psychiatric diagnosis before the burn injury. Patients who were confirmed to have been in remission prior to the burn but who relapsed after the burn, and patients without a previous diagnosis or history of psychiatric symptoms but who were diagnosed with a mental illness after the burn injury, with temporal and understandable association with the burn injury were categorised as having psychiatric illness as a sequelae of burn injury. Whenever possible, a collateral history was obtained to clarify the past history of mental illness. The time of initial psychiatric assessment after the burn injury varied from a few days to one month, while a majority were conducted within two weeks following the burn.

The sample was analysed using descriptive statistical methods and presented as percentages or proportions. Associations were explored using the Chi Square test with version 20.0 of Statistical Package for Social Sciences. All the patients were discharged by the time of the current study. Ethical clearance for the study was obtained from the Ethics Review Committee of the National Hospital of Sri Lanka (NHSL). Permission to conduct the study by perusal of records was obtained from the Director of NHSL and relevant consultants of the Burns Unit and the University Psychiatry Unit.

Results

We analysed 87 records of patients with burn injuries referred for psychiatric assessment. Forty-nine (56.3%) were females. The mean age was 37.4 years (SD=15.82). The largest proportion of burn patients (n=38,43.7%) were aged less than 30 years and the least proportion were above sixty years (n=12, 13.8%). Forty nine (56%) of the patients were married. Two were pregnant at the time of assessment. The level of education was not documented in a majority (n=50,57%,). Of the 37 records examined for level of education, 22 (25.28%) were educated up to Grade 11 (Table 1).

The mean body surface area (BSA) of burns was 36.26 (SD=16.61). Twenty-eight (32.2%) patients had BSA involving >30%. Fifteen patients (17.2%) had sustained burns involving <30% BSA. According to patient self-reports, 48 (55%) had sustained accidental burns, 27 (31%) had inflicted burns on self and in three (3.4%) had been deliberately inflicted by others. A majority (n=52, 59.8%) of burns had occurred at home (Table 1).

Among patients with self-inflicted burns, 12 (13.8%) reported planning the act for less than 30 minutes duration, and three (3.4%) had planned it over a more than 30 minutes period. Data regarding duration of planning was not available for 12 (13.8%) self-inflicted burns. Twenty-four (27.6%) out of the 27 patients with self-inflicted burns reported a conflict or stressful event within 24 hours prior to the incident. Among them, 18 (20.7%) reported conflicts with a partner, and four with their parent. According to the patient descriptions of reasons for self-immolation, only four reported a clear intent to die, and eighteen stated that their attempt was mostly to influence or frighten another person.

Table 1. Association of demographic and clinical factors with being diagnosed with mental illness following burn (n=87)

Variable	Categories	Diagnosed with mental illness Number (% of 87 patients)	No mental illness Number (% of 87 patients)	p value
Age	<60 years >60 years	44 (50.5%) 8 (0.09%)	25 (28.7%) 2 (0.02%)	0.312
Gender	Male Female	25 (28.7%) 27 (31.03%)	10 (11.4%) 17 (19.5%)	0.349
Marital status	Married Single/separated/ divorced/widowed	27 (31.03%) 18 (20.6%)	22 (25.28%) 5 (5.7%)	0.058
Education level	Below grade 5 Above grade 5	2 (2.2%) 22 (25.2%)	1 (1.1%) 12 (13.7%)	0.946
Employment status	Employed / retired Unemployed	25 (28.7%) 17 (19.5%)	12 (13.7%) 12 (13.7%)	0.453
Burn Surface Area (BSA)	Less than 30% More than 30%	17 (19.5%) 13 (14.9%)	2 (2.2%) 7 (8.0%)	0.070
Cause of burn	Accidental/ inflicted by others Self-inflicted	34 (39.0%) 15 (17.2%)	17 (19.5%) 12 (13.7%)	0.182
Past history of mental illness	Present Absent	20 (22.9%) 30 (34.4%)	10 (11.4%) 18 (20.6%)	0.709

Among the 87 patients, mental state examination at the time of assessment showed that 36 (41.4%) patients were depressed in mood, eight patients (9.2%) were anxious and six (6.9%) were irritable. Only 26 (29.9%) were euthymic. Nine (10.3%) patients had reported ongoing suicidal ideas. Psychotic symptoms were elicited in six (6.9%) patients.

Seventeen patients out of the 87 reported that they consumed alcohol; nine said that they used alcohol once a week or more, with regards to frequency. A past history of mental illness was recorded in 31 patients (35.6%, 95% CI 25.6-46.6) (Table 2). The more common diagnoses were substance use disorder (n=10, 11.5%), personality disorder (n=9, 10.3%), and depressive disorder (n=6, 6.9%) (Table 2).

On assessment of the 87 participants roughly within two weeks following burn injury, 52 (59.8%, 95% CI 48.7-70.1) were diagnosed with a mental illness as a sequelae of the burn. The most common diagnoses were depressive disorder (n=28, 32.2%) and adjustment disorder (n=14, 16.1%). Among the remaining patients, six were delirious and two patients had symptoms suggestive of post traumatic stress disorder (PTSD) and one patient was newly diagnosed with schizophrenia (Table 2).

In the psychopharmacological management of these 87 patients with burn injuries, antidepressants were the most commonly prescribed medications (n=21, 24%) followed by benzodiazepines (n=18, 21%). Antipsychotics were started for five patients (6%) and antipsychotics and antidepressant combination was started for four (4.6%) patients. Fifty patients (57%) were seen twice or more for psychiatric treatment and the rest were seen only once during their hospital stay or as outpatients. According to the records, one patient had died due to the burn injuries, following the initial assessment.

Female gender (p=0.009), being aged below 30 years (p=0.005) and being previously diagnosed with a psychiatric illness (p<0.000) were significantly associated with having a self-inflicted burn, while marital status (p=0.582) and the BSA of burn being >30% (p=0.515) were not significantly associated.

No significant associations were detected between demographic and clinical factors and being diagnosed with a mental illness post burn injury (Table 1). Being single, separated, divorced or widowed, was associated with a higher degree of mental illnesses after the burn injury when compared to the married group (p= 0.058). It was noted that participants with less than 30% burn injury (89.5%) were more likely to be diagnosed with a mental illness when compared with those with burns of BSA >30% (p= 0.070). However, these associations were not statistically significant (p=0.05).

Table 3 gives the cause of burn according to diagnosis of psychiatric illness. The three patients with schizophrenia presented with self-inflicted burn injuries. A majority of depressed patients (60%) and patients with adjustment disorder (78%) had accidental burns.

Table 2. Psychiatric diagnoses before and after burn injury among all patients referred for psychological assessment from the burns unit (n=87)

Psychiatric diagnosis	Psychiatric diagnosis before burn injury: Number (% of 87)	Psychiatric illness as a sequelae of burn injury Number (% of 87)
Substance use disorder	10 (11.5%)	1 (1.1%)
Depressive disorder	6 (6.9%)	28 (32.2%)
Adjustment disorder	0 (0.0%)	14 (16.1%)
Personality disorder/maladaptive personality traits	9 (10.3%)	0 (0.0%)
Schizophrenia	2 (2.3%)	1 (1.1%)
Delusional disorder	1 (1.1%)	0 (0.0%)
Dementia	2 (2.3%)	0 (0.0%)
Delirium	0 (0.0%)	6 (6.9%)
PTSD	0 (0.0%)	2 (2.3%)
Other	1 (1.1%)	0 (0.0%)
None	51 (58.6%)	27 (31.0%)
Missing data	5 (5.7%)	8 (9.2%)
Total	87	87

Table 3. Cause of burn according to patient's description by the type of mental illness of the patient with burn injuries

Type of mental illness	Accidental burns Number (% of total with the mental illness)	Burns inflicted by self/others Number (% of total with the mental illness)	Total
Schizophrenia	0 (0%)	3 (100%)	3
Depressive disorder	20 (60%)	13 (39%)	33
Substance use disorder	4 (57%)	3 (42%)	7
Adjustment disorder	11 (78%)	3 (21%)	14
Personality disorder/ maladaptive personality traits	0 (0%)	9 (100%)	9
Delirium	2 (66%)	1 (33%)	3
PTSD	1 (50%)	1 (50%)	2
Dementia	2 (100%)	0 (0%)	2
Delusional disorder	1 (100%)	0 (0%)	1
No mental illness	14 (51%)	13 (48%)	27

Discussion

Burns cause high morbidity and mortality (13). It has been shown that comorbid psychiatric illness adversely affects the outcome in burn injuries (14). According to the Indoor Morbidity and Mortality Report compiled by the Medical Statistics Unit of the Ministry of Health, the total number of hospital admissions for burn injuries in 2018 in Sri Lanka was 13364 (15).

Our findings indicate that over a quarter of patients referred for psychiatric assessment suffered self-inflicted burns. Female gender, being aged less than 30 years and a previous diagnosis of psychiatric illness were significantly associated with self-inflicted burns in this sample. A recent conflict with an immediate family member, and impulsivity with planning for less than half an hour emerged as common factors among deliberately self-inflicted burns. The burden of psychiatric illness after a burn was as high as 64% in this sample, but this may be influenced by the fact that these were patients suspected to have a psychiatric morbidity and thus referred for assessment.

In this sample, the majority were females and aged less than 30 years. This is the most productive population group in the country. Indoor morbidity and mortality statistics in 2018 revealed that 56.6% of all burn admissions were in males (15). In both males and females, the highest proportions admitted with burns were in the 17-49 year age group.

It is concerning to observe that as high as 31% of the sample presented with self-inflicted burns. As it is usual to refer all self-inflicted burns for psychiatric assessment we estimated that a minimum 6.9% of all inpatients managed in Burns Unit of NHSL may have presented with self-inflicted burns (self-inflicted burns/total inpatients in 2019=18/259). Sri Lanka reported the highest ever suicide rate in 1995 of 47 per 100,000 population (16). Since then suicide rates have reduced but there is a new trend in method substitution to more lethal methods (17). The age standardized suicide rate in 2012 was 17.1 / 100, 000 population with highest rate in older males (18). Female rates were highest in 17-25-year group. Rates for suicide by burn injuries are not available but police data for 2019 indicate that self-inflicted burns accounted for 3% of all suicides, 66% of suicides with self-immolation being females (unadjusted raw data) (19). A previous study in 2006 in the Coroner's Court in Colombo revealed that 34% of the suicides during one year were due to self-immolation, females: males in a ratio of 3.3:1 (11).

Two other studies in general hospital setting in eastern Sri Lanka as well as India and Nepal have reported 25% and 41% of burns being intentional burns and a majority being females (8,9,20,21). Above rates are similar to findings of our study. However, this pattern is reversed in western countries where older males with more substance use attempt suicide by self-immolation (22). Mortality rates for intentional burns have been shown to be three times as high as accidental burns (21). Self-inflicted burns have been shown to lead to worse outcomes with complicated hospitalizations and resistant depression and anxiety symptoms even at 10 years (14).

Twelve out of 27 persons with self-inflicted burns in this sample reported having planned the act for less than 30 minutes and among them a majority reported that they had a conflict with an immediate family member within 24 hours of the incident. The act had been carried out with intention to frighten or influence the other person in a majority. This suggests that a proportion of self-inflicted burns were not intended to end in death and were impulsive, but ongoing depression, psychosocial stressors as well as personality factors may have contributed to adopting this potentially lethal method of self-harm. This is further confirmed by the fact that 6 (6.9%) and 9 (10.3%) had depression and maladaptive personality traits respectively, before the burn, and 36 (41.4%) were found to be depressed at during mental state examination following the burn. Details of underlying psychosocial stressors were not analysed in our study, although they could play a pivotal role in self-harm attempts by lethal methods. Previous studies in Sri Lanka also found that marital and or relationship problems were the main provoking factors for self-inflicted burns (9,11). This has previously also been highlighted as a culturally influenced phenomenon in Sri Lanka especially in the Eastern Province (10,23) and is also described in Iran (24).

A pre-existing diagnosis of psychiatric illness was revealed in 35% in this sample. Psychiatric illness has been shown to have a strong association with burns (25). The relationship of mental illness with burn injuries is bidirectional. Psychiatric morbidity in patients with burns has been reported to increase duration of hospital stay, rates of re-grafting, time to return to satisfactory daily functioning levels and lead to poor health related quality of life (6,7,26).

The prevalence of pre-existing substance use disorders, personality disorders and psychotic disorders have been shown to be high in burn patients (4). This agrees with the findings of our study. Nine patients had expressed ideas of harming their lives immediately after the survival of an extensive burn injury. A previous study reported that patients with self-inflicted burns had increased suicidal ideation even at five years (14). A majority in our sample were found to have altered mental state findings including depressed mood and psychotic features.

The burden of psychiatric illness at the assessment after burn was as high as 59.8% in this sample with depression and adjustment disorder being the commonest diagnoses. The prevalence of psychiatric illness after burns have varied in studies, ranging from 46% to 55%

(27,28). Our estimate may be high as this was a sample referred for psychiatric assessment. Adjustment disorder, followed by alcohol and substance related conditions were reported as commonest psychological morbidity among patients with burn injuries in Nepal (21). Depression was identified as the most commonly occurring psychiatric morbidity in another study (29). Depression was associated with head, neck and face burns than other type of burns. PTSD has been reported in one third of patients in 3rd and 6th month post burn injury (30). Acute stress disorders, simple phobia, generalized anxiety and somatoform disorder also have been described in few studies following burns (27,31).

Female gender, younger age at the time of burns, facial burns and the level of pain have been found as significant associations with psychiatric morbidity (2,27,32,33). However, we could not identify any significant associations in this study. A prior psychiatric morbidity may have been missed or undiagnosed in this study, and also, some of the psychological morbidity seen at the time of assessment of the participants of our study may have been secondary to the burn injury and it's associated sequalae.

Limitations

This was a retrospective record-based study. The information recorded may have varied due to different presentations and based on the experience of the original assessor. Our sample size was moderate, and the sample was limited to patients referred for psychiatric assessment.

Conclusions

Our findings indicate the importance of psychiatric assessment of all patients with burn injuries, the need for the development of a validated screening tool for screening of psychiatric morbidity, and provision of appropriate psychological support for such patients. It is time for Sri Lanka to explore implementation of preventive strategies, in novel and appropriate ways, to reduce the occurrence of self-immolation as a method of self-harm.

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Statement of contribution

JSG as the principle investigator developed the research concept, drafted the research proposal, conducted the data entering, analysis and wrote the manuscript. ICP was involved in preparing the questionnaire, entering and analysis of data. MA was involved in developing the research concept, writing the proposal and drafting questionnaires. MD and RH were involved in writing and editing the manuscript. All authors have seen and approved the final version of manuscript.

Conflicts of interest

None declared.

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