

Psychiatric morbidity in burn injury patients

Prerna Malik, Kuldip C Sharma, Rajinder Garg

Abstract

Background: Available western literature suggests that there may be a high prevalence of psychiatric co morbidity in burn injury patients. It raises several issues pertaining to screening and management. However, only a limited data is available from Indian settings. **Aim:** The study aimed to find out the prevalence and correlates of psychiatric disorders in Indian patients with burn injury. **Methods:** It was a hospital based, cross-sectional study of burn injury patients (n=67). All patients were screened for psychiatric symptoms by SCL-90R (Symptoms Check List-90 Revised). A detailed psychiatric assessment was conducted by a psychiatrist and diagnosis made using ICD-10. The patients were also assessed using Montgomery Asberg Depression Rating Scale and Hamilton Rating Scale for Anxiety for depressive and anxiety symptoms respectively. **Results:** The psychiatric co-morbidity was higher in intensity and severity after more severe burns and in case of facial burns. It was observed more frequently in close temporal association to the burns. Three-fourths (75%) of patients screened positive on SCL-90R. As per ICD-10, 56.7% of burn injury patients had depressive disorder, 31.3% post traumatic stress disorder, 12% adjustment disorder, 11.9% somatoform disorder, 7.5% phobia and 6% acute stress reaction. **Conclusions:** The findings highlight the susceptibility of burn patients to develop psychiatric disorders, especially depression and anxiety. The psychiatric co-morbidity needs to be identified and addressed in order to provide a comprehensive management.

Key words: *Psychiatric morbidity, Burn injury*

Introduction

Burns are a major cause of death in the productive age group, next only to road traffic accidents.¹ With an increased survival of patients with burns, there comes a new focus on the psychological challenges and recovery that such patients must face. Burn trauma is often a devastating event associated with long term physical and psychological effects. Physiological recovery of burn patients is seen as a continual process divided into three stages.

During resuscitative or critical stage, supportive psychological interventions should focus on immediate concerns such as sleep, pain control and protecting patients' coping strategies. During the acute phase, symptoms of depression is likely to help.² The long term stage of recovery typically begins after discharge from hospital. Usually the first year after hospitalization is a psychologically unique period of high distress. In addition to the high demands of rehabilitation, patients must deal with social stressors including

family strains, return to work, sexual dysfunction, change in body image and disruption in daily life. Social support is an important buffer against the development of psychological difficulty.²

Meyer et al³ studied the young adults who had burn injury as children and found that 59.4% had a lifetime diagnosis and 45.5% had a current diagnosis of at least one axis-I major psychiatric disorder. Females had higher rates of psychiatric disorders compared to male patients.³ Another study found that anxiety was most common psychiatric disorder followed by post traumatic stress disorder (PTSD) and depression. The visibility of the burns i.e. burns on exposed body parts was an important factor in prediction of psychological outcome.⁴

A study on burn survivors reported that 20-30% of the patients had clinically significant symptoms of depression.⁵ Previous literature found PTSD in 17.8% and 20% of burn survivors at the baseline and 12 months follow-up respectively.⁶ Emerging evidence shows that patients with comorbid psychiatric disorder show poorer outcomes in recovery from their burn injury, spent significantly longer time in hospital and took longer time to heal the burn injuries.⁷

Only a limited number of studies are available from Indian settings.^{8,9} The study aimed to find out the prevalence of psychiatric disorders and associated factors in patients with burn injury in an Indian setting

Materials and method

The sample comprised of patients with burn injury visiting the outpatient clinics of the Departments of Surgery, Plastic Surgery and Psychiatry or admitted in the wards of Departments of Surgery and Plastic Surgery at the Rajindra Hospital of Government Medical College, Patiala between May 2007 to Aug 2008.

It was a sample of convenience. Patients with pre-existing psychiatric disorders, significant medical or neurological illness, mental retardation or those who refused to provide consent were excluded.

The study was approved by the Institutional ethics committee. A written informed consent was taken from the patients and guardians (in patients less than 18 years of age).

Instruments for assessment

- Semi structured proforma: to record socio-demographic and clinical details, including circumstances of burn injury, time since burn injury and percentage of burn injury.
- Symptom Check List 90-Revised (SCL-90R)⁸: It is a psychiatric self-report inventory with 90 items scored on a five-point Likert scale, indicating the rate of occurrence of the symptom during the time reference. It is intended to measure symptom intensity on nine different subscales. It is a measure of current, point-in-time psychological symptom status. Each item is rated by the patient on a five-point scale of distress from 0 (none) to 4 (extreme). Each of the nine symptom dimensions comprises 6-13 items. The scores on each dimension are means of the scores of all items of the dimension. The patient is placed in category of absent symptoms if the score is less than 25% of the maximum score, mild if the score is between 25-50% of the maximum score, moderate if the score is between 50-75% of the maximum score and severe if patient scored between 75-100% of the maximum score.
- Montgomery Asberg Depression Rating Scale (MADRS)⁹: The rating is based on

a clinical interview which moves from broad questions about symptoms to more detailed ones which permit rating of severity. The rating lies on the defined scale steps (0, 2, 4, 6) or between them (1, 3, 5). Scores of 0-6 indicates normal/recovered, 7-19 mild, 20-34 moderate and 35-60 severe depression.

- Hamilton Rating Scale for Anxiety (HARS)¹⁰: It is a semi-quantitative scale which was constructed solely to assess severity of the clinical condition and not to serve as a diagnostic tool. Only few of the 14 items are clinical signs to be directly observed during the interview. The majority of the items are symptoms and the assessment must be based on the condition during the last days (minimum period 3 days). A total score of 0-5 indicates no anxiety, while scores of 6-10 mild, 11-15 moderate and ≥ 15 indicates severe anxiety.
- Clinical interview as per ICD-10¹¹ criteria for diagnosis of psychiatric disorders.

All patients were administered SCL-90R scale to screen for psychiatric symptoms. This was followed by administering MADRS and HAMS scales to establish the presence and severity of depression and anxiety respectively. Based on a detailed clinical interview in consultation with consultants, the psychiatric diagnosis was established by using ICD -10 criteria in patients who screened positive on SCL-90R.

Results

A total of 80 burn injury patients were screened, of which 67 patients were found to be eligible as per the selection criteria. Mean age of patients was 28.87 ± 9.19 years. Table 1 shows the socio-demographic profile of patients. Table 2 shows the clinical characteristics of burn

injury. Most (73%) of the burns were accidental while 27% were non accidental (assaults/ attempted homicide/ attempted suicide).

Table 1: Socio-demographic profile of patients

Variable	Frequency (%)
Age (in yrs)	
10-19	10 (15%)
20-29	28 (42%)
30-39	18 (27%)
40-49	7 (10%)
>50	4 (6%)
Gender	
Male	18 (27%)
Female	49 (63%)
Marital status	
Married	52 (78%)
Single/divorced/widowed	15 (22%)
Domicile	
Urban	27(40%)
Rural	40 (60%)
Occupation	
Semi-skilled	17 (25.3%)
Skilled	12 (17.9%)
Housewives	38 (56.8%)

Table 2: Characteristics of burn injury

Variables	Frequency (%)
Duration	
< 1 year	45 (67%)
>1 year	22 (33%)
Percentage	
$\leq 20\%$	18 (27%)
$>20\%$	49 (73%)
Degree	
1 st degree	9 (13.4%)
2 nd degree	28 (41.8%)
3 rd degree	22 (32.8%)
4 th degree	8 (12%)
Site of Burn Injury	
Involving face	48 (71.6%)
Not Involving face	19 (28.4%)
Medico legal cause	
Accidental	49 (73%)
Non accidental	18 (27%)
Nature	
Thermal burn	38 (56.7%)
Electric burn	17 (25.4%)
Chemical burn	12 (17.9%)
Cause	
Stove accidents	30 (44.8%)
Electricity	12 (17.9%)
Hot liquid spill	18 (26.8%)
Acid spill	4 (6%)
Fire with open flames	3 (4.5%)

The SCL-90R scores of the sample are shown in Table 3. Table 4 shows the diagnostic break-up according to ICD-10 criteria. Table 5 shows scores of the sample on MADRS and HARS.

Table 3: Symptoms Check List-90 Revised (SCL-90R) scores

SCL -90R	Frequency(%)
Global score	
< 90	17 (25.4%)
91-180	20 (29.9%)
181-270	16 (23.9%)
271-360	14 (20.8%)
Sub-scales	
Somatization	28(42%)
Depression	55 (82%)
Paranoid	12 (18%)
I/P Sensitivity	27 (40%)
Phobia	10 (15%)
Anxiety	48 (72%)
Obsessive compulsive	5 (7%)
Anger/Hostility	20 (30%)
Additional items	39 (58%)

Table 4: Psychiatric diagnosis according to ICD-10 criteria

ICD-10 diagnosis	Frequency (%)
Reactions to stress and adjustment disorder (F43)	33 (49.3%)
Acute stress reaction (F43.0)	4 (6%)
Post traumatic stress disorder (F43.1)	21 (31.3%)
Adjustment Disorder (F43.2)	8 (12%)
Depression (F32)	38 (56.7%)
Mild (F32.0)	14 (20.9%)
Moderate (F32.1)	16 (23.9%)
Severe (F32.2)	89 (11.9%)
Phobic anxiety disorder (F40)	5 (7.5%)
Somatoform disorder (F-45.0)	8 (11.9%)

Discussion

The present study was aimed at assessing the prevalence of psychiatric disorders among patients of burn injury and to find out the variables associated with the psychiatric disorders.

Majority of patients with burn injury were female, mainly in the reproductive age group

Table 5: Scores for depression and anxiety

Scores	Frequency (%)
MADRS	
0-6	18 (26.9%)
7-19	22 (32.8%)
20-34	17 (25.3%)
35-60	10 (14.9%)
HARS	
0-5	26 (38.8%)
6-10	23 (34.3%)
11-15	10 (14.9%)
≥ 16	8 (12%)

HARS: Hamilton's Anxiety Rating Scale;

MADRS: Montgomery Asberg Depression Rating Scale

between 20-39 years. A previous Indian study¹² reported that 45-48% of the patients were in the age group of 15-25 years and females outnumbered the males in all age groups. In another similar study of 215 women with burns in Mumbai, majority of the patients were in range of 16-60 years, with the mean age of 24.8 years.¹³

Death of married females in India is very common, mostly related to dowry. The young brides may be killed or compelled to commit suicide, most frequently by burning. A study of 152 burned wives observed that 31% were homicidal burns. Majority (77%) of affected wives were in age range of 16-25 years at the time of incident and sustained more than 70% total body surface area burn injuries.¹⁴

Most (75%) of the patients with burn injuries had psychiatric symptoms. Burn scars after dermal injury are cosmetically disfiguring and force the scarred person to deal with an alteration in body image/appearance.¹⁵ In present study, the extent of burns was found to be positively associated with psychological impairment. Most of the patients having psychiatric morbidity had more percentage of burn injuries, of 2nd and 3rd degree (75%), which was consistent with previous research.

Studies have shown that post-burn depression does correlate with percentage body surface burn, duration of disability and specific areas of involvement.¹⁶ The physical disfigurement results in social non-acceptance, loss of job opportunity and feelings of inferiority.¹⁷ High body image dissatisfaction was associated with larger burns, higher incidence of facial burns, more severe depressive symptoms and post trauma distress.¹⁸ Visibility of burns, especially involving face, was found to be crucial factor in causing psychiatric symptoms in burn patients. In present study, most of the patients (71.6%) with psychiatric morbidity had burns on multiple parts of the body, including face. In a previous study of 51 burn patients, depression was most commonly observed psychiatric disorder, particularly in patients with involvement of face and hands.¹⁶

Individuals who sustain a burn injury are often affected by pre-morbid psychiatric disorders which make them more vulnerable to post-burn psychiatric problems. About 1/3 of patients have been found to have major psychiatric disorders (DSM IV) prior to burn injury.¹⁹ Pre-existing psychiatric disorders like anxiety and mood disorders are the most common. Approximately 35% of patients have an Axis I psychiatric disorder prior to the burn injury. Pre-injury substance abuse disorders are common among burn victims and majority of the patients were diagnosed as alcohol abuse disorder. Estimates of alcohol abuse or dependence in burn patients range from 6%–30%.²⁰

The most common ICD-10 diagnosis was depressive disorder (56.7%) followed by PTSD (31.3%), adjustment disorder (12%), somatoform disorder (11.9%), phobia (7.5%) and acute stress reaction (6%). These findings are comparable to previous cross-sectional studies.^{21,22} In a follow-up study on burn

patients, it was found that one month after hospital discharge, 54% of patients showed symptoms of moderate to severe depression and two years after discharge, 43% of patients still reported moderate to severe depression. Women had higher depression scores than men in both cases.²³ Acute stress disorder (ASD) symptomatology could reliably predict PTSD upto 24 months in an earlier prospective study.²⁴ In another 12-month follow up study of 35 burns patients, 31% had PTSD, 29% had subclinical PTSD reactions and 40% had no PTSD symptoms.²⁵ In a follow up study of 301 burns patients at 2-3 weeks post burns 26% had PTSD and 15% of them at 12 months post burn.²⁶

The presence of significant psychiatric morbidity in burn patients has significant clinical implications. Undiagnosed and untreated psychiatric morbidity might affect the treatment compliance and cause overall poor quality of life. Pharmacological and psychological interventions have a positive impact on psychiatric symptoms in burn patients. Treatments of problems in social areas include cognitive behavior therapy, social skill training and community interventions. Therefore, the symptoms of anxiety and mood should be the subject of screening in the post-burn phase and treated, if indicated.¹⁵ Another issue which is of critical importance is the proper training of clinicians to recognize and refer patients with common mental disorders. There is a need to strengthen consultation-liaison services and need to sensitize the surgeons and physicians dealing with burn patients regarding the need for psychiatric screening and referral.

The present study has certain limitations. It was a cross sectional study and sampling was non-randomized. The findings are representative of the study population and may not be extrapolated to the community at large. Longitudinal studies involving larger samples

selected by systematic sampling methods would be needed to estimate true prevalence of psychiatric morbidity in burn injury patients. The absence of use of a semi-structured interview e.g. using SCID is also considered as a study limitation.

To conclude, psychiatric morbidity is highly prevalent in burn injury patients and appears to be affected by the site and severity of injury. The appropriate psychiatric referral and care must be included at every stage of the treatment for the better adjustment and quality of life of burn injury patients. Burn patients often require years of supervised rehabilitation, reconstruction and psychosocial support. The quality of burn care is no longer measured only by survival but also by long term functioning.

References

1. Subramanyam M. Epidemiology of burns in a district hospital in Western India. *Burns* 1996; 22 : 439-42.
2. Wiechman SA, Patterson DR. Psychosocial aspects of burn injuries. *BMJ* 2004; 329 : 391-3.
3. Meyer WJ, Blakeney P, Thomas CR, Russell W, Robert RS, Holzer CE. Prevalence of Major Psychiatric Illness in Young Adults Who Were Burned as Children. *Psychosomatic Medicine* 2007; 69 : 377-82.
4. Williams EE, Griffiths. Psychological consequences of burn injury. *Burns* 1991 Dec; 17 : 478-80.
5. Lawrence, JW, Fauerbach JA, Thombs BD. Frequency and correlates of depression symptoms among long-term adult burn survivors. *Rehabilitation Psychology* 2006; 51 : 306-13.
6. Madianos MG, Papaghelis M, Ioannovich J, Dafni R. Psychiatric disorders in burn patients: a follow-up study. *Psychother Psychosom.* 2001; 70 : 30-7.
7. Tarrier N, Gregg L, Edwards J, Dunn K. The influence of pre-existing psychiatric illness on recovery in burn injury patients: the impact of psychosis and depression. *Burns* 2005; 31 : 45-9.
8. Kapidzic-Durakovic S, Karabegovic A, Halilbegovic E, Cickusic A, Osmanovic N, Kudumovic Z. Check list of symptoms SCL-90-R at persons with extremities amputations. *Bosn J Basic Med Sci*, 2006; 6 : 58-61.
9. Montgomery SA, Asberg M. "A new depression design to be sensitive change. *Br. J Psychiatry*, 1979; 134 : 382-9.
10. Hamilton M. The assessment of anxiety states by rating. *Br J Med Psychol* 1959; 32 : 50-5.
11. World Health Organisation. The ICD-10 Classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines. Geneva; 1992.
12. Haralkar SJ, Rayate M. Socio-demographic profile of burn cases in the reproductive age group (15-45 years) admitted in Shri. Chhatrapati Shivaji Maharaj General Hospital, Solapur. *Solapur Med J* 2005; 2 : 3-9.
13. Bhalerao VR, Desai VP, Pai DN. Study of socio-psychological aspects of burns in females: *Journal of Postgraduate Medicine* 1976; 22 : 147-53.
14. Kumar V, Tripathi CB. Burnt wives: A study of homicides. *Med Sci Law* 2004; 44 : 55-60.
15. Loey NEV, Son MJV. Psychopathology and psychological problems in patients with burn scars: epidemiology and management. *Am J Clin Dermatol* 2003; 4 : 245-72.
16. Chang FC, Herzog B. Burn Morbidity: A Follow up Study of Physical and Psychological Disability. *Ann. Surg Jan.* 1976; 183 : 34-7.

17. Peck MD, Kruger GE, Merwe AEV, Godakumbura W, Ahuja RB. Burns and Fires from Flammable Non-electric Domestic Appliances: Part I. The Scope of the Problem. *Burns* 2008; 34 : 303-11.
18. Fauerbach, J., Heinberg, L., Lawrence, J., Munster, A., Palombo, D., Richter, D. The effect of early body image dissatisfaction on subsequent psychological and physical adjustment following disfiguring injury. *Psychosom Med* 2000; 62 : 576 - 82.
19. Power PS, Cruse CW, Boyd F. Psychiatric status, prevention and outcome in patients with burns: A prospective study. *J Burn Care Rehabil* 2000; 21 : 85-8.
20. Levenson JL. Psychiatric Disorders Among Burn Patients. *Psychiatry Weekly* 2007; 2.
21. Thombs BD, Haines JM, Bresnick MG, Magyar-Russell G, Fauerbach JA, Spence RJ. Depression in burn reconstruction patients: symptom prevalence and association with body image dissatisfaction and physical function. *Gen Hosp Psychiatry* 2007; 29 : 14-20.
22. Loncar Z, Bras M, Mickovic V. The relationships between burn pain, anxiety and depression. *Coll Antropoal* 2006; 30 : 319-25.
23. Wiechman SA, Ptacek JT, Patterson DR, Gibran NS, Engrav LE, Heimbach DM. Rates, Trends, and Severity of Depression after Burn Injuries. *Journal of Burn Care & Rehabilitation*. 2001; 22 : 417-24.
24. Mckibben JB, Bresnick MG, Wiechman SA, Fauerbach JA. Acute stress disorder and posttraumatic stress disorder: a prospective study of prevalence, course and predictors in a sample with major burn injuries. *J Burn Care Res* 2008; 29 : 22-35.
25. Bryant RA. Predictors of post-traumatic stress disorder following burns injury. *Burns* 1996; 22 : 89-92.
26. Loey NEEV, Maas CJM, Faber AW, Taal LA. Predictors of chronic posttraumatic stress symptoms following burn injury: Results of a longitudinal study. *J Trauma Stress* 2003; 16 : 361-69.

Source of funding: Nil

Conflict of Interest: None declared

Perna Malik, Assistant Professor, Dept of Psychiatry, PGIMS, Rohtak

Kuldip C. Sharma, Formerly Professor & Head, Dept of Psychiatry, Govt. Medical College, Patiala.

Rajinder Garg, Senior Resident, Dept of Psychiatry, Gian Sagar Medical College & Hospital, Banur.

Correspondence to: Perna Malik, Assistant Professor, Dept of Psychiatry, PGIMS, Rohtak. E-mail: pm.malik@yahoo.co.in