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# Study of Psychiatric Co-Morbidity in Burn Patients Admitted in Tertiary Care Institute: A Hospital based Prospective Study

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**Abstract:** ***Introduction: Burn injuries are devastating, sudden and unpredictable forms of trauma which affect the victims both physically and psychologically. The incidence of burn injury varies greatly in different regions and countries throughout the world as a result of both economic and social factors. Objectives: To find out the prevalence of psychological co-morbidity among burn patients and its association with patient characteristic. Material and Methods: A hospital based prospective study was carried out on 128 burn patients admitted at tertiary care institute, Jaipur. The patients were screened with GHQ-30 and SCID-I for determining psychological co-morbidity. Patients were reassessed for psychological co-morbidity at three and six months. Results: Nature of burn was accidental in 116 (90.63%) patient while suicidal in 12 (9.37%) patients. Mean age of burn patient was 27.4 ± 3.6 years. Women were affected twice than men. The prevalence of psychological co-morbidity among burn patients was 40.62%. Generalized anxiety disorder was commonest psychological morbidity present in 30.77% patients. Occurrence of psychological co-morbidity was found associated with age, gender and marital status (p<0.05). Conclusion: The psychological stress experienced by people suffering burn injuries, have been largely ignored which adversely affect treatment outcome.***

**Keywords:** sychiatry, depression, GHQ-30, SCID-1, Electrocution, acute stress disorder agoraphobia

## 1. Introduction

A burn is the partial or complete destruction of the skin by thermal energy from flames, steam and hot liquids, contact with hot objects, explosion or electrical current.[1] While many cases of burn injury are accidental, lot many of them can be self inflicted.[2] Burns is more common under the influence of alcohol, patients suffering depression due to socio economic problems, psychiatric patients, accidental burn injury at work place: chefs, oil refineries, petroleum industry, fire workers, food industries, etc[3]

Burn injuries are devastating, sudden and unpredictable forms of trauma which affect the victims both physically and psychologically.[4] When the skin is seriously damaged, the properties of that tissue are lost, the barrier functions destroyed and the internal milieu is exposed to and affected by threatening surroundings, although advancement in medical and surgical management have dramatically decreased mortality rates from burn injuries.[5] The treatment of burns is a long procedure that begins on the day of injury and can continue for many years or even decades.[6] The growing number of individuals surviving such devastating injuries has prompted an increased focus on problems of rehabilitation, independence and psychosocial adjustment.[4]

Burn injuries can place the affected person at risk of suffering from psychiatric diseases in a number of ways. Firstly, a burn injury is an unexpected, painful, and life-changing injury which can cause pain and feelings of uncertainty and fear in the sufferer.[7] Secondly, the burn injury threatens the person's health and bodily integrity which may result in psychological trauma in affected peoples.[8] Further, burn injury may result in permanent scarring, limited functionality and intensive and long-lasting physical treatment, all of which may place the affected persons at risk of psychiatric disorders.[9] The existence of psychiatric disorders ranging from acute stress reaction, post traumatic stress disorder, anxiety, depression, delirium and psychosis among burn patients are well documented in literature.[2] Such psychological problems that may interfere with compliance to various treatment and rehabilitation measures.[10, 11] Keeping these factor in mind, this study was planned to identify such psychiatric issues in burn patients so that, for prompt treatment of burn patients these issue can be addressed.

### Objectives

a) To find out characteristic of burn patients admitted in a tertiary care institute.
b) To find out the prevalence of psychological co-morbidity among them.
c) To determine association between psychological co-morbidity and patients characteristic.

## 2. Material and Methods

**Study design:** A hospital based prospective study.
**Study setting**: Department of Burn and Plastic Surgery, SMS Medical College and attached Hospitals, Jaipur.
**Study period**: One year (July 2018 to June 2019) for enrollment of patients and six month (July 2019 to December 2019) for follow up and report writing.
**Sample size**: Based on inclusion and exclusion criteria, 128 burn patients were enrolled in study.

**Inclusion criteria**:
1) Adult patients (Age 18 years and above).
2) Patient able to communicate properly.


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3) Patients who are willing to give written consent.

**Exclusion Criteria:**
1) Patients having any previous history of psychiatric disorders.
2) Serious patients not able to communicate.
3) Patients with hypertension, diabetes, ischeamic heart disease and other co-morbid medical illnesses.
4) Not willing to give consent.

**Study Tools**
1) Predesigned structured questionnaire.
2) General Health Questionnaire (GHQ-30).
3) Structured Clinical Interview for DSM-IV Axis I Disorders (SCID I)

The GHQ of Goldberg (1972) is the most popular instrument for screening psychological disorders in patients and community samples.[12] SCID-I is a diagnostic examination used to determine DSMIV Axis I disorders (major mental disorders).[13]

### 2.1 Method

A hospital based prospective study was carried out at Department of Burn and Plastic Surgery, SMS Medical College and attached Hospital, Jaipur. Based on inclusion and exclusion criteria, total 128 burn patients were enrolled in study. After first few crucial days and with stabilization of vital functions, patients were informed about the study and written consent was obtained. They were interviewed after two weeks of their burn trauma. The patients were screened with GHQ-30 for determining psychological co-morbidity. Patients with GHQ score greater than 5 (suggestive of some underlying psychological co-morbidity as per Likert's scoring system) were then interviewed with the SCID-I for diagnosis of psychological disorders. Patients were followed up at three months and six months. At the end of six months, patient were again assessed for psychological co-morbidity by GHQ-30 and SCID-I. To eliminate possibility of error in assessment of psychological co-morbidity among burn patient, help of psychiatry department was taken. Ethical permission was taken from Institutional Ethic Committee before enrollment of patients.

### 2.2 Statistical analysis

The collected data were compiled and tabulated using MS Excel 2010 and analyzed using statistical software SPSS trial version 20. Appropriated tables and figures were generated. The results were expressed in percentages. Chi-square test was applied to determine association. P value < 0.05 was considered as statistically significant.

## 3. Result

Among 128 burn patients, nature of burn was accidental in 116 (90.63%) patient while suicidal in 12 (9.37%) patients. Flame burn was the commonest cause of burn (69.53%) followed by electrocution (28.90%). Chemical burn was least common (1.56%).

Out of 128 burn patients, majority (63.28%) were in the age group of 18 to 40 years while 36.72% were above the age of 40 years. Patients of 18 year to 68 years were enrolled in study and mean age of burn patients was 27.4 ± 3.6 years. Number of women (87, 67.97%) suffering from burn were twice than men (41, 32.03). Although 69.53% burn patients were literate but most of them (57) were educated upto primary class and only 2 were graduates. 56 patients were engaged in certain type of work and not dependent on family members. Rest 72 (56.25%) were un- employed and most of them were housewives (94.44%). (Table 1)

Most of patients (81.25%) belong to low socio-economic families as they were involved in un-skilled work (labour). Marital status has a dominant role in burn injuries as most of the burn patients were married (88.28%) at the time of burn and mostly were females. Burn was more common in rural area (70.31%) than urban area (29.69%). (Table 1)

Based on GHQ-30 scoring system, the prevalence of psychological co-morbidity among burn patients was 40.62%. These patients were reassessed by SCID-I for diagnosis of psychiatric disorders. Generalized anxiety disorder was found to be the most common psychological morbidity (16, 30.77%) followed by major depressive disorder (12, 23.07%), acute stress disorder (08, 15.38%), posttraumatic stress disorder (07, 13.46%), panic disorder without agoraphobia (05, 9.61%) and panic disorder with agoraphobia (04, 7.69%). (Figure 1 & 2)

Table 2 depicts association of psychological co-morbidity and patients characteristics. Occurrence of psychological co-morbidity was found associated with age more than 40 years ($p=0.0001$), females ($p=0.02$) and marital status ($p=0.021$) however association of education, occupation and area of resident was found insignificant with occurrence of psychological co-morbidity ($p<0.05$).

Total 17 (13.28%) burn patients were died during treatment and among them 07 were male and 10 were females. All of them were above the age of 40 years. 70.58% burn patient who die had psychological co-morbidity while among survive patients only 36.03% had psychological co-morbidity and this difference was found statistical significant ($p=0.006$). (Table 3)

Among 111 burn patient who survived, were followed up at three and six month. Inspite of best effort 13 patients and 28 patients were lost to follow up at three month and six month respectively. Out of 83 patients assessed at six month, psychological co-morbidity was found in 31.32% of burn patients.

## 4. Discussion

The incidence of burn injury varies greatly in different regions and countries throughout the world as a result of both economic and social factors. Mechanisms of injury also vary widely among different countries and communities depending on factors like the way food is prepared, heating system, industrial environments and general living conditions. A burn trauma exposes the individual to significant physical, psychological and social damage.


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In present study an attempt was made to study the psychological co- morbidity of patients with burns at a tertiary care institute. GHQ-30 and SCID-I scales were used for psychological assessments of 128 burn patients.

Psychiatric disorders have been reported to be 28% to 75% of all burn patients. In present study, the prevalence of psychological co-morbidity among burn patients was 40.62% which was similar to that documented in others studies done by Browne et al, [14] 1985; Madianos et al, [15], Fauerbach et al, [6] although psychological co-morbidity was found in more than 50% by Kriglen et al.[16]

Self-inflicted burns account for about 4% of burn injuries worldwide (Horner BM et al[17]), but in our study it was found two times higher (9.37%) although incidence was much lower than a study done in south India by Shanmugakrishnan R et al[5] in 2008 with wide variations from 0.4 to - 25% and there are indications that the numbers are increasing. Flame burn was the commonest cause of burn (69.53%) followed by electrocution (28.90%) in present study and similar observation was found in study done at Srinagar by Asma Manzoor et al.[18]

Present study shows, burn injuries was more common (63.28%) in young age individuals (mean age 27.4± 3.6 years) and females (67.97%). Similarly burn was found common in age group of 20 to 40 years in study done by Manimaran et al[19] and Asma Manzoor et al[18] although mean age was observed 38.41 years. Males are strongly over-represented in burn statistics all over the world, but in India female were affected more than males and this could be due to higher number of homicidal attempts of burns among females due to reasons of dowry, interpersonal issues etc.[18, 19]

In present study, most of burn patients were from low socio-economic families (81.25%), educated below primary (74.21%), married (88.28%) and reside in rural area ((70.31%). Similar finding was found in study conducted at Rims, Ranchi by Vivek Bhasker et al[20] and Asma Manzoor et al.[18]

Based on GHQ-30 and SCID-I scales, psychological co-morbidity among burn patients was 40.62%. Generalized anxiety disorder was found in 30.77% followed by major depressive disorder in 23.07%, acute stress disorder in 15.38%, posttraumatic stress disorder in 13.46%, panic disorder without agoraphobia in 9.61% and panic disorder with agoraphobia in 7.69%. This was similar to many other studies demonstrating significantly higher anxiety and depression scores as compared with normal subjects done by Madianos et al, [15] Difede et al, [21] Van Loey et al, [22] Fukunishi et al, [23] Parslow et al.[24]

Present study found association of psychological co-morbidity with age more than 40 years (p=0.0001), females (p=0.02) and marital status (p=0.021) however association of education, occupation and area of resident was found insignificant with occurrence of psychological co-morbidity (p<0.05). This is in corroboration with a study done by Maes M et al, [25] which showed younger age and female gender to be risk factors for anxiety disorders. However Williams et al[26] and Tedstone et al[27] have reported no impact of these factors. Asma Manzoor et al[18] also found association of rural population with psychological co-morbidity.
Mortality rate was 13.28% in our study which is much lower than observed by Subrahmanyam et al (56.5%) in Solpur, Bilwani et al (58.26%) in Ahmadabad and Jayaraman et al (52.33%) in Chennai.[28, 29, 30]

In a study by Madianos et al, [15] face disfigurement was significantly associated with the presence of psychiatric morbidity. The goal of rehabilitation efforts after a major burn is to support the natural adaptation process in order to obtain as good an end result as possible in the widest sense although present study found psychological co-morbidity in 31.32% of burn patients even after six months which reduce chance of patient compliance and adversely affect outcome.

## 5. Conclusion

With the increased survival rates in burn patients with increased access to medical care, a careful assessment of the burn victims is the need of the hour. The prevalence of psychological co-morbidity among burn patients was 40.62%. Psychological co-morbidity was more common with age more than 40 years female gender and marital status. The emotional problems experienced by people suffering burn injuries, have been largely ignored which adversely affect treatment outcome. Understanding the huge amount of psychiatric co-morbidity in patients with burn injuries will help the clinicians in rapid identification of the problem. This in turn will help in providing appropriate services to such patients and will help in speeding up their recovery.

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**Table 1:** Characteristic of Burn Patients.

| Patients characteristic | Numbers (%) |
|---|---|
| Age | |
| < 40 years | 81 (63.28%) |
| >40 years | 47 (36.72%) |
| Gender | |
| Male | 41 (32.03%) |
| Female | 87 (67.97%) |
| Education | |
| Illiterate | 39 (30.47%) |
| Literate | 89 (69.53%) |
| Occupation | |
| Employed | 56 (43.75%) |
| Un-employed | 72 (56.25%) |
| Marital status | |
| Married | 113 (88.28%) |
| Unmarried | 15 (11.72%) |
| Resident | |
| Urban | 38 (29.69%) |
| Rural | 90 (70.31%) |

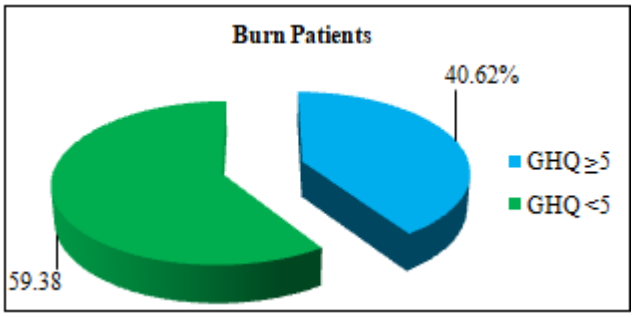


**Figure 1:** Psychological co-morbidity among burn patients according to GHQ-30.


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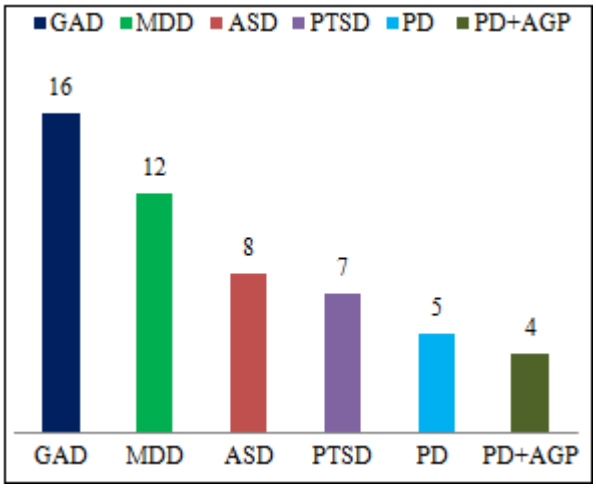


**Figure 2:** Distribution of burn patients according to type of psychological co-morbidity.

**Table 2:** Association of psychological co-morbidity with patients characteristics

| Patients characteristic | Psychological co-morbidity | | P value |
|---|---|---|---|
| | Present (n=52) | Absent (n=76) | |
| Age | | | 0.0001* |
| < 40 years | 21 (25.92%) | 60 (74.08%) | |
| >40 years | 31 (65.96%) | 16 (34.04%) | |
| Gender | | | 0.02* |
| Male | 11 (26.82%) | 30 (73.18%) | |
| Female | 41 (47.13%) | 46 (52.87%) | |
| Education | | | 0.39 |
| Illiterate | 18 (46.15%) | 21 (53.85%) | |
| Literate | 34 (38.20%) | 55 (61.80%) | |
| Occupation | | | 0.41 |
| Employed | 25 (44.64%) | 31 (55.36%) | |
| Un-employed | 27 (37.5%) | 45 (62.5%) | |
| Marital status | | | 0.021* |
| Married | 50 (44.25%) | 63 (55.75%) | |
| Unmarried | 02 (13.33%) | 13 (86.67%) | |
| Resident | | | 0.86 |
| Urban | 15 (39.47%) | 23 (60.53%) | |
| Rural | 37 (41.11%) | 53 (58.89%) | |

*** P value <0.05 was consider statistically significant.**

**Table 3:** Association of psychological co-morbidity with patient's outcome

| Outcome | Psychological co-morbidity | | P value |
|---|---|---|---|
| | Present (n=52) | Absent (n=76) | |
| Survive | 40 (36.03%) | 71 (68.47%) | 0.006* |
| Death | 12 (70.58%) | 05 (29.42%) | |

* P value <0.05 was **consider statistically significant.**


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