Depressive Symptoms Among Survivors of Burn Injuries

Asghar Arfaie, Shahrokh Amiri

a: Clinical Psychiatry Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

Correspondence

Dr. Shahrokh Amiri. Department of Psychiatry, Razi Hospital, Elgoli Road, Tabriz, East Azerbaijan, Iran. Tel/Fax: +98411380486-90. Email: Amirish@tbzmed.ac.ir

Abstract

Purpose: To estimate the prevalence of depressive symptoms in patients surviving a burn injury.

Methods: A descriptive cross-sectional study was conducted on 100 burn inpatients (50 males and 50 females) admitted to Sina Burn Center; Tabriz University of Medical Sciences during 2012. The severity and grade of burn injury was evaluated by a dermatologist. Beck Depression Inventory (BDI-II) was used to evaluate the existence and severity of depressive symptoms.

Results: In this study, 50% of burn patients suffered from depressive symptoms. Among these, 38 (38%) patients were identified with low, 13 (13%) with moderate and 5 (5%) with severe depressive symptoms. Depressive symptoms were reported in 20 (40%) males and 36 (72%) females. Moreover, depressive symptoms were observed in 15 (26.3%) patients with a total body surface area (TBSA) less than 30% and 41 (73.2%) with TBSA more than 30%.

Conclusion: Depressive symptoms are common in burn patients and was twice as common among women. Psychological interventions along with the medical therapy should be provided for these patients.

Introduction

Burn injuries are considered as a major health risk in its different forms and more than 95% of burns occur in developing and underdeveloped countries [1]. Development of comprehensive burn centers and improvements in treatments of large burn injuries have dramatically increased the proportion of surviving patients [2].

Due to their long-term disabilities, burn injuries have become a great global health problem [3]. Burns are regarded as an important public health problem in Iran too [4]. These injuries are of extensive morbidity leading to substantial medical costs [5]. While it is reported as the sixth main cause of mortality [1], 28% of the survivors cannot return to their previous functional level due to the severity of injuries and the consequences [6].

Burn injuries are associated with extreme stress and affect mental and physical aspects of patients' health [7, 8]. Mood is one of the most important mental aspects being affected by burn injuries. A research showed that the prevalence of at least mild to moderate symptoms of depression was 23% to 26% and in-hospital symptoms of depression (considering demographics, burn severity, and symptoms of PTSD) predicted change in physical health from pre-burn to 2 months post-discharge [9]. Another study shows that the prevalence of depression of at least moderate severity, was higher in female patients (46%) compared to all survivors from the center (29%), as well as a national sample of burn survivors (27%) [10]. In other study, symptoms of moderate to severe depression was observed in 54% of the patients within the first month and a follow up during the second month showed that 43% of them still meet the criteria for depression with unchanged severity[11]. These mental consequences could be long lasting as incidence of depression is reported to be 5.9% within 5 years after the burn injury, being 7.4% in female patients and 4.3% in male patients [12]. Major depressive disorder (MDD) may deteriorate the condition of patients by increasing pain feeling and decreasing physical functioning of these patients [1].

Studies investigating depressive symptoms in survivors of burn injuries have some methodological differences. A systematic review revealed that studies using the depression subscale of the Hospital Anxiety and Depression Scale [13] report the prevalence of depression to be 4% to 13%, whereas generally higher rates were estimated by studies that used the Beck
Depression Inventory [14], being 13% to 26% for moderate to severe symptoms and 22% to 54% for at least mild symptoms [15]. Regardless of the measurement tool, there is a lack of information about mental problems of survivors of burn injuries in Iran. Basic information about prevalence of depressive symptoms in survivors of burn injuries at different geographical areas is of high importance.

High rate of burn injuries as well as its mental and physical problems indicates the necessity of acquiring thorough information about mental problems in these patients; including depression. Accordingly, the main motivation of this study was based on scientific need to evaluate rate of depressive symptoms in patients with burn trauma in North-West of Iran in order to manage their mental health.

**Methods**

This descriptive cross-sectional study was conducted on patients with burn injuries admitted to Sina Hospital, Tabriz University of Medical Sciences (North West of Iran) during 2012. Personal information was collected through the interview from the family or patient. Burn severity and grade was diagnosed and evaluated by a dermatologist. Psychiatric disorders (including MDD) were evaluated by a psychiatrist using the structured clinical interview for DSM-TV-TR (SCID-IV). Other general medical conditions were diagnosed using the medical files and interview with patients.

**Participants**

All of admitted patients were evaluated for fulfilling the inclusion criteria. Inclusion criteria were age of 18 years or more and experiencing the first hospitalization for burn trauma. Admission for any non-trauma reason (e.g. suicide attempt), history of MDD within 6 months, history of coexisting psychiatric diagnosis other than MDD, major physical disorders (epilepsy, cardiovascular diseases, congenital diseases and physical disabilities), led to exclusion.

**Assessment Tools**

Structured Clinical Interview for DSM-IV-TR (SCID-IV)

SCID-TV-TR is a tool for face to face psychiatric interview based on DSM-IV criteria and was used to diagnose comorbid psychiatric disorders in this study. Inter-rater reliability of SCID-IV for DSM-IV Axis I Disorders (SCID I) and Axis II Disorders (SCID II) is moderate to excellent for the Axis I disorders [16]. The previous report confirmed acceptable validity and reliability of the Persian version of SCID-IV in Iranian patients [17].

Beck Depression Inventory (BDI-II)

In this study we administered the second version of Beck Depression Inventory (BDI-II; Beck et al., 1988). It is a 21-item self-report instrument to measure severity of depression in adults. The BDI was developed to assess those symptoms of depression corresponding to MDD diagnostic criteria based on DSM-IV. Items are ranked on a four-point scale ranging from zero to 3, with higher scores reflecting more severe symptoms. Validity of BDI-II has been confirmed and coefficient alpha reliability is reported to be high (α=0.92) [11]. High internal consistency (Cronbach’s alpha=0.87) and acceptable test-retest reliability (r=0.74) are previously reported for Persian version of BDI-II [18]. According to BDI index, a score less than 10 excludes MDD and scores varying from 11 to 17, 18 to 29, and 30 to 63 indicate low, moderate, and severe depression respectively [19].

**Statistical analysis**

The data were statistically analyzed by SPSS-17 software. Descriptive statistics (mean, frequency, average percentage, standard deviation) were used to describe demographic features and prevalence of depression. A P-value less than 0.05 was considered statistically significant.

The study protocol was approved by the regional ethics committee of Tabriz University of Medical Sciences. Written informed consent was obtained from all of the participants.

**Results**

A total of 163 patients were evaluated during the study process. Injury was result of suicidal attempt in 12 (including 7 females and 5 males). 28 more were excluded because of comorbid psychiatric disorder (11 females and 17 males) and 23 patients were also excluded because of history of depression during the recent 6 months.

Thus a total of 100 patients (50 males and 50 females) were analyzed. Mean age (standard deviation) of the patients was 34.12 (8.11) years. The youngest was 18 and the oldest was 54.

The injury was caused by direct fire in 84 (84 %) and chemicals in 16 (16 %) patients. Most of the patients (n=68, 68%) had burn injuries to their head, upper and lower extremities. Head, face and neck areas were involved in 36 (36 %) patients.

Depressive symptoms were observed in 56 (56%) patients. Severity of depression in males and females are described in table 1. Total number of non-depressed patients was 44 (44%) consisting of 30 (60%) males and 14 (28%) females.

Depressive symptoms were observed in 15 (26.3%) and 41 (73.2%) patients with less and more than 30% total body surface are (TBSA) burn, respectively. table 1 shows depressive symptoms regarding degree of burn injuries as well.

**Discussion**

This study evaluated survivors of burn injuries and observed depressive symptoms in 56% of patients, mostly females. There are few similar studies from Iranian patients. The research conducted in Tehran (Iran) reported prevalence of depressive symptoms in 61% of patients with burn injuries, where 19.3% of them had mild, 17.3% had moderate and 24.7% had severe depressive symptoms [7].

A study conducted in USA demonstrated that depressive symptoms were seen in 36-58% of cases within the first month and in 43% in two years after trauma [11, 20, 21]. A documentary study conducted on medical files of patients with burn trauma hospitalized at ICU (Intensive Care Unit) from 1997 to 2011, reported that 15.5% of the patients suffered from depression [22]. According to their findings, 76% of patients were identified with low, 26% with moderate and 10% with severe depressive symptoms. In other reports, depression was estimated in 19.3% as low in 14% to 24.7% as severe depression [7, 20], and prevalence of moderate to severe depressive symptoms was reported to be 36.6% to 46% [20, 21].

The difference seen in different reports about prevalence of depression may be attributed to various instruments evaluating depression and different statistical populations such that the
statistical population of one of the described researches [7] was 13-75 years old patients. Another report [21] evaluated depression, with EQ-5D questionnaire in the sample of patients hospitalized at ICU. Different prevalence of depression is also reported in different time intervals following trauma by another report [11]. Depressive symptoms was mostly seen in female patients of our study sample which is compatible with previous reports [7, 23] Although gender may be important in mental reaction against burn [19], high prevalence of depression in females may not merely result from such injuries because prevalence of depression is estimated to be 5.1% and 2.5% in females and males of Iranian general population. Females suffer from depression 1.96 times more than males [24]. So the pattern may be similar to general population and more studies are required to conclude that female survivors of burn injuries are at higher risk for depression. 

Along with previous studies, the higher the severity of burn, the higher the prevalence of depression [15,25,26] such that 26.3% of patients with less than 30% TBSA suffer from depressive symptoms whereas depressive symptoms are seen in 73.2% of patients with more than 30% TBSA. Since burn results in physical and emotional problems and increases interpersonal negative attitudes, it may increase depressive symptoms. Some studies demonstrated that burn injuries might lead to disorders in body image [22, 27] and stigmatization [28]. Although the findings emphasized on necessity of psychiatric and psychological interventions in the survivors of burn injuries, further studies are of special importance considering factors affecting depression of such patients in order to identify interventional priorities among them.

This study had some limitations. This was a one center study, however this center is one of the few referral centers for burn injuries in northwest of Iran and admits most of the patients in this area. Thus the study sample in this study can reflect characteristics of these patients from this area. Another limitation was that we failed to follow up patients after discharge from hospital that could be addressed in further studies. Nature of the study (as a descriptive cross sectional study) limits the results in some part as we did not have hospitalized patients for other reasons (non-burn trauma or non-trauma) as controls. However results of this study have their own clinical implication and we believe that could reach the goal of depicting mental condition of survivors of patients after burn injury regarding depressive symptoms. Results of this study are strengthening by standard questionnaires and narrow criteria for inclusion and exclusion.

Conclusion

This study showed that 56% of patients suffered from depressive symptoms after burn injuries. Depressive symptoms were observed in 40% of males and 72% of females. Considering the high prevalence of depressive symptoms in survivors of burn injuries in our population, it is necessary to socially support these patients to mitigate their newly onset mental complications [27]. These patients are highly susceptible in different aspects of their mental life [18, 25, 26 and 29]. Thus, importance of evaluation of psychological factors in these patients (especially those with severe burns) should be considered by health care providers to achieve the best results.

Conflict of interests: None to declare with this publication.

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