

ANXIETY AND DEPRESSION IN BURN PATIENTS

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Background: The psychological aspects of burn injury have been researched in different parts of world producing different outcomes. Therefore objective of this research is to determine the frequency of Anxiety and Depression in burn patients. To assess the socio-demographic distribution of patients developing Anxiety and Depression and to determine the effects of burn related factors on development of Anxiety and Depression. **Methods:** A Case series was conducted at the Department of Burn, Pakistan Ordinance Factory Hospital, Wah Cantt. for a duration of 12 months commencing from June 2007 and concluded in May 2008. The study population comprised of hospitalized patients with 1% to 50%, selected through non probable sampling technique who were assessed for Anxiety and Depression on fifteen day after burn injury. Testing protocol comprised of questionnaire having socio-demographic variables and burn related variables. Beck Depression Inventory and Beck Anxiety Inventory was applied to evaluate Anxiety and Depression in Burn patients. Descriptive statistics like mean with Standard Deviation was calculated for age. Frequencies along with percentages were calculated for socio-demographic variables. The frequencies and proportions were also calculated for presence and extent of severity of depression and anxiety in burn patients. **Results:** Fifty patients were included in the study, thirty patients (60%) were male and 20 (40%) were females. The mean age of participants was 33.64±19 years. Majority of participants, 38 (76%) had sustained burn injury up to 25%. Flame was found to be most common agent of burn injuries affecting 19 (38%) patients. Depression was seen amongst 29 (58%) patients. Thirteen (26 %) patients had mild, 7 (14%) had moderate and 9 (18%) had severe Depressive symptoms. Anxiety was seen among 41 (82%) patients, thirteen (26%) patients had mild, 11 (22%) had moderate and 17 (34%) had severe Anxiety symptoms. **Conclusion:** Anxiety was present in 41 (82%) and Depression was present in 29 (58%) patients following burn injury. This study highlights the importance of the simultaneous evaluation and management of Anxiety and Depression in burn injured patients.

Keywords: Anxiety, Depression, Burn

INTRODUCTION

Burn injuries are devastating, sudden and unpredictable forms of trauma which affect the victim both physically and psychologically.¹ The biopsychosocial impact on individual hospitalized for severe burn wounds begins at the moment of injury and extends through out the person's life.² In last decades, the increase in survival rate following burn injury has prompted an increased focus on problems of rehabilitation, psychosocial adjustment¹ and psychosocial concomitants.³ The psychological aspects of burn injury have been researched in different parts of world producing different outcomes.⁴⁻⁶ Psychological impairment has found to be present in 45.5% and 40% at baseline and follow up assessments respectively. The extent of burn has been found to be associated with psychological impairment.³ The prevalence of mild to moderate symptoms of Depression are present in 23% to 26%⁷ while major depression in 4% to 10%⁸. Lower levels of Anxiety are present in 67.14% whereas moderate to severe Anxiety is reported by 24.29% and 8.57% of patients respectively.¹ A major component of suffering from burn injury is severe pain.⁹ It has been recognized that Anxiety can worsen the acute pain.¹ Moreover, both Depression and Anxiety are strong

prospective predictors of greater pain, more fatigue and physical dysfunction.¹⁰

The objective of the research is

1. To determine the frequency of Anxiety and Depression in burn patients.
2. To assess the socio demographic distribution of patients developing Anxiety and Depression.
3. To determine the effects of burn related factors on development of Anxiety and Depression.

MATERIAL AND METHODS

A case series was conducted at the Burn Centre, Pakistan Ordinance Factory Hospital, Wah Cantt which is a tertiary care health facility. The duration of study was 12 months commencing from June 2007 and concluded in May 2008. The study population comprised of hospitalized patients with 1% to 50% burns who were assessed for Anxiety and Depression on fifteen day after burn injury. All the participants were selected by using non Probable Purposive Sampling technique. Patients were included irrespective of gender difference & mode of referral. All inpatients aged 15 and above, who were willing to participate were included in study. Patients with any co morbid psychiatric or medical disorder were excluded from the study.

The data collection technique comprised of observation (like record checking, physical examination & Mental State Examination), interviewing of the patient to collect information regarding history and administering data collecting scales. Data collection tool comprised of a questionnaire having two sections including socio-demographic information and burn related information. Socio-demographic information included age, gender, education, marital status, occupation, and area of residence. Burn related information included extent of burn, localization and reason of burn which was obtained from patients and verified from medical case notes. Beck Depression Inventory II (Urdu translation)¹¹ was used to assess the level of depression in participants. It is 21 items self administered instrument, rated on 4-point scale ranging from 0–3. Beck Depression Inventory has cut-off score of 14, with the range of 14–19 for mild depression, 20–28 for moderate depression and 29–63 for severe depression. In present study BDI was pre tested on sample of 10 normal (5 males, 5 females) and 10 burn injured patients (5 males, 5 females). The alpha reliability coefficient was computed to address its reliability and item total was determined to ensure its construct validity. The reliability coefficient was found to be 0.91 and all items of BDI significantly correlated with total test scores. This indicated that BDI is a reliable and valid instrument for measuring depression in post burn patients.

Beck Anxiety Inventory¹² was used to assess the level of anxiety in patients. It is a 21 items inventory rated on 4-point scale ranging from 0–3. Beck Anxiety Inventory has cut-off score of 8, with the range of 8–15 for mild anxiety, 16–25 for moderate anxiety and 26–63 for severe anxiety. In present study BAI was pre tested on sample of 10 normal (5 males, 5 females) and 10 burn injured patients (5 males, 5 females). The alpha reliability coefficient was computed to address its reliability and item total was determined to ensure its construct validity. The reliability coefficient was found to be 0.87 and all items of BAI significantly correlated with total test scores. This indicated that BAI is a reliable and valid instrument for measuring Depression in post burn patients.

After explaining the purpose of the study consent was obtained from patients who were fulfilling the specified selection criteria. Testing protocol comprised of questionnaire, Beck Depression Inventory and Beck Anxiety Inventory which was administered after briefing about the procedure.

Statistical analysis was carried out by using SPSS version 11. Descriptive statistics like mean with Standard Deviation was calculated for age. Frequencies along with percentages were calculated

for socio-demographic variables. The frequencies and proportions were also calculated for presence and extent of severity of Depression and Anxiety in burn patients.

RESULTS

Fifty patients were eligible for the study and all were included. Thirty patients (60%) were male and 20 (40%) were females. Patients were within age range of 13 and 85 years, with maximum number of 6 (12%) patients being 25 years old. The mean age of participants was 33.64 ± 19 years.

Twenty-six (52%) patients were single, 23 (46%) were married and one was widow. Maximum number of patients, that is 29 (58%) were under matriculation, 11 (22%) had done matriculation, and 10 (20%) had qualification of Intermediate and above. 31 (62%) patients were unemployed, while 19 (38%) were employed. The unemployed group also included house wives and students. 38 (76%) of patients belonged to urban areas, 12 (24%) belonged to rural areas.

Majority of participants which are 38 (76%) in number had sustained burn injury up to 25% while 12 (24%) sustained burn injury from 25–50%. Flame injury was found to be most common agent of burn injuries affecting 19 (38%) patients with most common source of stove blast in 16 (84.21%) patients and gas cylinder in 3 (15.78%) patients. Burn injury on multiple sites was observed in 28 (56%) followed by burn injury on head, neck and face in 8 (16%), legs and feet in 7 (14%), arms and hands in 6 (12%) and trunk in 1 (2%).

A high prevalence of Depression was seen amongst all the patients with 29 (58%) out of the 50 patients assessed as depressed. Thirteen (26%) patients presented with mild, 7 (14%) with moderate and 9 (18%) with severe depressive symptoms. Among 12 patients having more than 25% Total Body surface Area involved out of which 9 (75%) were found to be Depressed.

Similarly a high prevalence of Anxiety was seen among patients with total of 41 (82%) patients out of which thirteen (26%) patients presented with mild, 11 (22%) with moderate and 17 (34%) with severe anxiety symptoms. 12 (100%) patients had more than 25% Total Body surface Area and they were found to have Anxiety. Gender differences in Depression and Anxiety have been shown in Figure-1.

The demographic distribution of patients with frequency of Depression and Anxiety has been shown in Table-1.

The burn related variables of patients with frequency of Depression and Anxiety have been shown in Table-2.

Table-1: Demographic Distribution of Patients with Depression and Anxiety. (n=50)

FACTORS	DEPRESSED	NOT DEPRESSED	FACTORS	ANXIETY	NO ANXIETY
Age Range			Age Range		
15-39 (n=36)	21 (58.33%)	15 (41.66%)	15-39 (n=36)	30 (83.33%)	6 (16.66%)
40-65 (n=9)	5 (55.55%)	4 (44.44%)	40-65 (n=9)	8 (88.88%)	1 (11.11%)
66-90 (n=5)	3 (60%)	2 (40%)	66-90 (n=5)	3 (60%)	2 (40%)
Gender			Gender		
Male (n=30)	18 (60%)	12 (40%)	Male (n=30)	25 (83.33%)	5 (16.67%)
Female (n=20)	11 (55%)	9 (45%)	Female (n=20)	16 (80%)	4 (20%)
Marital status			Marital status		
Single (n=26)	14 (53.85%)	12 (46.15%)	Single (n=26)	21 (80.77%)	5 (19.23%)
Married (n=23)	14 (60.87%)	9 (39.13%)	Married (n=23)	19 (82.61%)	4 (17.39%)
Widow (n=1)	1 (100%)	0	Widow (n=1)	1 (100%)	0
Education			Education		
Under Matric (n=29)	18 (62.07%)	11 (37.93%)	Under Matric (n=29)	25 (86.21%)	4 (13.79%)
Matric (n=11)	6 (54.55%)	5 (45.45%)	Matric (n=11)	8 (72.73%)	3 (27.27%)
Intermediate & above (n=10)	5 (50%)	5 (50%)	Intermediate & above (n=10)	8 (80%)	2 (20%)
Occupation			Occupation		
Employed (n=19)	11 (57.89%)	8 (42.11%)	Employed (n=19)	17 (89.47%)	2 (10.53%)
Unemployed (n=31)	18 (58.06%)	13 (41.94%)	Unemployed (n=31)	24 (77.42%)	7 (22.58%)
Residential status			Residential status		
Rural (n=12)	7 (58.33%)	5 (41.67%)	Rural (n=12)	10 (83.33%)	2 (16.67%)
Urban (n=38)	22 (57.89%)	16 (42.11%)	Urban (n=38)	31 (81.58%)	7 (18.42%)

Table-2: Burn Related Variables with Frequencies of Anxiety and Depression. (n=50)

FACTORS	DEPRESSED	NOT DEPRESSED	FACTORS	ANXIETY	NO ANXIETY
TBSA*			TBSA*		
Up to 25% (n=38)	20 (52.63%)	18 (47.37%)	Up to 25% (n=38)	29 (76.12%)	9 (23.68%)
More than 25% (n=12)	9 (75%)	3 (25%)	More than 25% (n=12)	12 (100%)	0 (0)
Major area of Burn			Major area of Burn		
Head, Neck & Face (n=8)	4 (50%)	4 (50%)	Head, Neck & Face (n=8)	6 (75%)	2 (25%)
Trunk (n=1)	1 (100%)	0 (0)	Trunk (n=1)	1 (100%)	0 (0)
Arms & Hands (n=6)	3 (50%)	3 (50%)	Arms & Hands (n=6)	5 (83.33%)	1 (16.67%)
Legs & feet (n=7)	2 (28.57%)	5 (71.43%)	Legs & feet (n=7)	3 (42.86%)	4 (57.14%)
Multiple sites (n=28)	19 (67.86%)	9 (32.14%)	Multiple sites (n=28)	26 (92.86%)	2 (7.14%)
Reason of Burn Injury			Reason of Burn Injury		
Flame Burn (n=19)	15 (78.95%)	4 (21.05%)	Flame Burn (n=19)	17 (89.47%)	2 (10.53%)
Chemical Burn (n=7)	2 (28.57%)	5 (71.43%)	Chemical Burn (n=7)	6 (85.71%)	1 (14.29%)
Electric Burn (n=7)	5 (71.43%)	2 (28.57%)	Electric Burn (n=7)	6 (85.71%)	1 (14.29%)
Bomb Blast (n=13)	6 (46.15%)	7 (53.85%)	Bomb Blast (n=13)	9 (69.23%)	4 (30.77%)
Scalds (n=4)	1 (25%)	3 (75%)	Scalds (n=4)	3 (75%)	1 (25%)

*Total body surface area

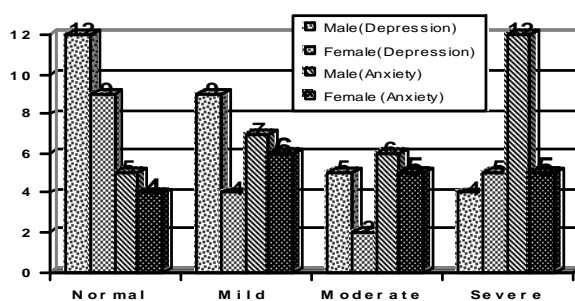


Figure-1: Gender Differences in Depression and Anxiety

DISCUSSION

In the present study there was higher proportion of male patients (60%) as compared to female patients (40%) which is in accordance with many other studies¹³⁻¹⁵ but in contrast to the findings of an Indian study where

65.7% patients were females and 34.3% were male.¹⁶ The mean age of participants in this study was 33.64±19 years which is close to mean age of 31.42 years observed in one study¹⁷, but different from mean age of 18.96 years observed in another study.¹³ The majority of the participants in the study were unemployed that is 76% which is relatively higher from percentage of 67.2% in study conducted in Egypt.¹⁸ The reason might be the fact that in our study house wives and students were also included in unemployed group.

For majority of participants 20-25% of total body surface area was involved which is comparatively higher to the findings of Loncar where maximum number of patients had 1-9% burns.¹ Flame related burn injuries (stove, gas cylinders) were most common present in 38% of cases as also reported elsewhere.^{14,16,19} Explosion of gas cylinder and kerosene oil were most frequently involved in causing flame injuries which may

be because of the fact that these are widely used as domestic fuels in Pakistan.¹⁴

In the study a significant number of patients showed Depression (58%) and Anxiety (82%). The reason for this high rate can be the fact that burn injury is often a devastating event with long term physical and psychological effects. In addition to traumatic nature of burn accident the pain during management may also induce psychopathological responses.⁵

The estimation of the rate of Depressive symptoms in post burn patients have been recorded variably in previous studies ranging from 22% to 54%^{8,20} for mild depression and 13% to 26% for moderate to severe depression⁸ whereas in this study 26% of patients showed mild symptoms of depression, 14% experienced moderate and 18% experienced severe symptoms.

The observations made in present study in terms of mild (26%) and moderate (22%) Anxiety symptoms were nearer to that of Loncar.¹ According to their findings 20% had mild and 21% had moderate Anxiety. On the other hand severe symptoms presented at the rate of 34% in this sample which is greater as compared to 8.57% reported by study.¹ There can be several factors which can contribute to overall high rate of Anxiety symptoms (82%) which include circumstances leading to injury (usually accidental), high cost of treatment, worry about progress of treatment and survival, fear of disfigurement and worry about ability to work in future.¹

In this study 52.63% of patients who had burn injury up to 25% developed Depression and 76.12% developed Anxiety while 75% patients who had 25%–50% of burn developed Depression and 100% developed Anxiety. Thus from above mentioned finding it can be inferred that in this study Total Body Surface Area was linked with levels of Anxiety and Depression. It might be expected that large Total Body Surface Area can lead to more psychological distress in post burn patients. Percent of Total Body Surface Area burned have been associated with increased procedural Anxiety²¹ and high Depression scores.²² One study suggests that patients even with small burn injuries of 1% and less can experience clinically significant levels of psychological difficulties after burn.⁴

As per the results patients who sustained burn injury at multiple sites were more likely to develop Anxiety (92.86%) and Depression (67.86%) followed by those who had injury at visible sites such as head, face and neck. Authors such as Clarke and Martin (1978) found that the location of the burn played a role in psychological adjustment.²³

Location of burn on head, neck and face causing disfigurement has found to increase the possibility of developing a psychiatric disorder.³

We considered demographic variables in terms of age, gender, marital status, education, occupation, residential status. According to the results patients with in age range of 66–90 years presented with higher rate of Depression (60%) as compared to other patients. On the other hand, patients with in age range of 38-60 years presented with slightly higher rate of anxiety as compared to other participants. A study suggests that age at the time of the burn was related to post-burn psychological adjustment.²⁴

Our results suggesting Depression (60%) and Anxiety (83.33%) higher among male participants are contradicted by findings suggesting that women have higher depression scores than men.²⁵ However Loncar found no gender differences in level of Anxiety and Depression¹. Female gender in combination with facial disfigurement have found to be risk factor for depression.⁵ We found higher rates of Anxiety and Depression among married and those who were under matriculation. One study that took into account the demographic variable of participants found no significant association of educational background and employment status with Depression.²³ According to our results unemployment and residing in rural areas was related to higher scores on BDI and BAI.

CONCLUSION

Anxiety is common in burn patients; therefore, this problem should be addressed right from start of treatment since acute anxiety can aggravate the severe pain. Patients who are depressed require therapy which should be started in hospital and be continued till discharge and full rehabilitation. Flame was most common cause of burn injury.

LIMITATIONS AND RECOMMENDATIONS

This study had small sample size which was selected through non Probable Sampling technique. It is devoid of follow up of patients which could have help us in further investigation of Anxiety and Depression among patients.

Thus burn centres must devise and implement the multidisciplinary approach for treatment and follow up services of burn cases. . This may also contribute towards prediction of post burn adjustment. The presence of Anxiety and Depression among substantial number of cases necessitates the psychological screening and diagnosis for burn cases. This study also highlights the importance of the simultaneous management of Anxiety and Depression in burn patients.

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