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Correlation to Body Areas

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DEPRESSION AND ANXIETY IN CORRELATION TO BODY AREAS INVOLVED IN PATIENTS OF BURNS

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ABSTRACT

Objective: To evaluate the severity of depression and anxiety among patients of burns and correlate depression and anxiety with areas of body involved in burns.

Study Design: A cross-sectional study.

Place and Duration of Study: The departments of Psychiatry and department of Plastic Surgery, Combined Military Hospital Multan, from Oct 2019 to Mar 2020.

Methodology: Through consecutive sampling, 56 patients of burns reporting to burns unit were assessed for anxiety and/ or depression based on the diagnostic criteria of International Classification of Diseases version 10. Symptom severity was assessed using Beck Depressive Inventory for depression and Beck Anxiety Inventory for anxiety. Descriptive statistics like mean with standard deviation was calculated for age. Frequency along with percentages was calculated for socio-demographic variables, Anxiety and depression.

Results: Depression was present among 30 (53%) of participants out of which 16 (53.5%) had mild, 11 (37.9%) had moderate while only 3 (12.5%) had severe depression. Anxiety was seen among 50 (89%) of participants out of which sixteen (32.1%) had mild, 26 (51.7%) had moderate while 8 (16%) had severe anxiety. Significant correlation existed among the major area involved in burn with both anxiety and depression (p<0.01).

Conclusion: There is a very high prevalence of anxiety and depression among patients of burn. Significant positive correlation existed between the level of anxiety and the areas involved in burns.

Keywords: Anxiety, Burns, Depression.

INTRODUCTION

Burn care is among the few areas of medicine which are challenging medically, surgically and psychiatrically[1-2]. Psychological aspects are much more prevalent than these are estimated. The vulnerable people include the patients, their caregivers and medics[3-4]. Although no one is immune to burn injury, the Bum injuries commonly affect the very young and the very old, both men and women[1]. Bum injuries are not same in all patients. These can vary from small wounds to extensive injuries. The former can be easily managed in the outpatient clinic while later require hospitalization for variable duration and multiple specialists and departments are in involved in provision of healthcare to the victims of severe burn injuries. It can result in multi-organ system failure, a prolonged hospital course, and long-term functional and psychosocial sequale[5,6].

There is improved outcome of burn patients due to Improvements in resuscitation, the introduction of topical antimicrobial agents, and, most importantly, the practice of early burn wound. However, the psychiatric aspects of the management of the burn patients have been under-rated. So this important aspect of burn management needs to be highlighted appropriately[7,8].

It is not only the patient od severe burn who is vulnerable to various psychiatric disorders but People involved in looking after and treatment of severe burn patients are also prone to psychological stress and various other psychiatric ailments. This is because of physical, financial and emotional stress faced by them. The situation is further complicated and aggravated if the burn patient is the main earning person[9,10].

A study was planned to assess and quantify the psychological impact of severe burn injuries. This can help in early detection of any psychiatric illness and appropriate management.

METHODOLOGY

This cross-sectional study was conducted at the department of Psychiatry, Combined Military Hospital March Multan in liaison with the department of Plastic Surgery from October 2019 to March 2020. A sample size of 56 was estimated via Epi Tools Epidemiological Calculator while keeping level of significance 5%,

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confidence level 95% estimated true proportion 79% 7, and 11% of absolute precision[11,12]. We consecutively sampled 56 burn patients who were assessed for anxiety and/or depression based on the diagnostic criteria of International Classification of Diseases version 10 after approval from the hospital ethical committee. Patients having past history of psychiatric illness were excluded because their results may alter the findings of the research. All participants were interviewed after the informed written consent and their confidentiality was ensured. Individuals with other disabling diseases and past psychiatric history were not included.

Demographic details of the Participants inductees were documented. Burn related information included extent of burn (total body surface area involved), localized and reason of burn was noted.

Detailed assessment and symptom severity was assessed using beck depressive inventory (BDI) for depression and Beck Anxiety Inventory (BAI) for anxiety. BDI consists of 21 questions, each with four possible answers that are assigned a score ranging from 0-3. Higher scores indicate more severe symptoms. Total score is obtained by adding individual scores of 21 items and total score ranges from 0-63. The cut off score for presence of symptoms is[9]. It may be noted that BDI is for detecting depressive symptoms and not for diagnosing depression. Scores of 0-9 indicate minimal depression, 10-18 mild depression, 19-29 moderate depression, and scores of 30-63 indicate severe depressive symptoms. BAI consists of 21 items, scored on Likert-type scale from 0-3 where 0 is considered negative, 1 is judged as mild, 2 is deemed moderate, and 3 is considered severe. Total score of 0-7 reflects minimal anxiety and a score of 8-15 points toward mild anxiety. Score of 16-25 correlates with moderate anxiety and score of 26-63 compares with severe anxiety. Descriptive statistics like mean with standard deviation was calculated for age. Frequency along with percentages was calculated for socio-demographic variables. Frequency and proportions were also calculated for extent of depression and anxiety in burn patients.

Data analysis was performed using SPSS-20. The data were described as num-bers and percentages. For association and comparison Pearson's Chi square test was used. All the inferences were made at 95% confidence interval and *p*-values of ≤0.05 were considered significant.

RESULTS

Fifty six participants were included in this study. Forty (71.4%) participants were male while 16 (38.5%) were female. Thirty seven (65%) of participants ranged between 15-40 years of age while 19 (35%) ranged between 41-60 years of age. Mean age of participants was 32.3 ± 18 years. Forty three (76%) participants were married while 13 (23.2%) were unmarried. Twenty six (46.4%) participants were primary educated, 18 (32.1%) secondary educated, 9 (16%) had higher education, 2 (3.5%) were graduate while 1 (1.7%) was illiterate. Forty (71.4%) participants were employed while 16 (28.5%) were unemployed (table-I).

Burn injuries on multiple sites was seen in 22

Table-I: Distribution of demographic variables.

Characteristics	n (%)
Age	
15-40	37 (65)
41-60	19 (35)
Gender	
Male	40 (71.4)
Female	16 (28.5)
Marital Status	
Married	43 (76)
Unmarried	13 (23.2)
Educational Status of the Patient	
Illiterate	1 (1.7)
Primary	26 (46.4)
Secondary	18 (32.1)
High school	9 (16)
University	2 (3.5)
Employment Status of the Patient	
Employed	40 (71.4)
Un-employed	16 (28.5)
Major Area Involved	
Head neck and face	7 (12.5)
Trunk	3 (5.3)
Arms and hands	19 (33.9)
Legs and feet	5 (8.9)
Multiple sites	22 (39.2)
Total Body Surface Area Involved	
Up to 25%	47 (83.9)
More than 25%	9 (16)
Reason for Burn Injury	
Flame	29 (51.7)
Chemical	3 (5.3)
Electric	3 (5.3)
Explosive	2 (3.5)
Scald	19 (33.9)
Level of Anxiety	
Mild	16 (32.1)
Moderate	26 (51.7)
Severe	8 (16)
Level of Depression	
Mild	16 (53.5)
Moderate	11 (33.9)
Severe	3 (12.5)

(39.25), injury to arms and hands in 19 (33.9%), head, face and neck in 7 (12.5%), legs and feet burn injuries in 5 (8.9%) while only 3(5.3%) sustained burn injuries on trunk (table-I).

Majority of participants i.e. 47 (83.9%) sustained up to 25% of burn injury while 9 (16%) of participants sustained >25% of burn injury. Flame injury affected 29 (51.7%), scald affected 19 (33.9%), 3 (5.3%) each for chemical and electric burn injuries while only 2 (3.5%) were affected by burns due to explosives (table-I).

Depression was present among 30 (53%) of participants out of which 16 (53.5%) had mild, 11 (37.9%) had moderate while only 3 (12.5%) had severe depression (table-I). Twenty six (55.5%) participants with burn injuries up to 25% had depression. Six (66.6%) participants having burn injuries of >25% presented with depression (table-II).

Table-II: Anxiety and depression in burn patients with relation to body surface area.

Factors n (%)	Depressed n (%)	Anxiety n (%)
Total Body Surface Area		
Involved (n)		
Up to 25% (n=47)	26 (55.3)	37 (78.7)
More than 25% (n=9)	6 (66.6)	8 (88.8)
Major Area of Body		
Head, neck and face (n=7)	3 (57.1)	6 (85.7)
Trunk (n=3)	2 (66.6)	3 (100)
Arms and hand (n=19)	10 (57.8)	17 (89.4)
Legs and feet (n=5)	1 (20)	4 (60)
Multiple sites (n=22)	14 (72)	20 (90.9)
Reason of Burns		
Flame (n=29)	23 (79.3)	26 (89.6)
Chemical (n=3)	1 (33.3)	3 (100)
Electric (n=3)	2 (66.6)	2 (66.6)
Explosive (n=2)	1 (50)	2 (100)
Scalds (n=19)	6 (31.5)	15 (78.0)

(79.3%) of those who sustained burn injuries from flames, 6 (31.5%) having scald and 2 (66.6%) of participants with electric burn injuries presented respectively with depression (table-II).

Anxiety was seen among 50 (89%) of participants out of which 16 (32.1%) had mild, 26 (51.7%) had moderate while 8 (16%) had severe anxiety (table-I). Thirty seven (78.7%) participants who had burn injuries up to 25% presented with anxiety while only 8 (88.8%) having burn injury of >25% presented with anxiety. Twenty (90.9%) participants with multiple burn injuries, 17 (89.4%) having burn injuries on arms and hands, 6 (85.7%) participants with head, neck and face burns, 4 (60%) participants with burn injuries on leg and feet presented with anxiety (table-II).

Twenty six (89.6%) participants with flame burn injuries, 15 (78.9%) participants having scalds, 3 (100%) having chemical burns, 2 (100%) having burns due to explosions and 2 (66.6%) of participants with electric burns presented respectively with anxiety (table-II). After evaluating statistical correlation of body areas involved in burns with the severity of anxiety and depression, a significant correlation was found with both anxiety and depression (p=0.00) (table-III).

DISCUSSION

In this study 65% of the participants were between 15-40 years of age with mean age of 32.3. Proportion of males was 71.4% and 38.5% were females. 98% of participants were literate or educated while only 1.7% were illiterate. These results are similar to the results of study done by Alvi in which mean age of participants was 31.4, 60% were male, 40% were females and 100% were educated[7].

In this study 39.2% of the participants sustained burn injury to the multiple sites followed by injuries to

Table-III: Anxiety and depression in burn patients with relation to body areas involved.

	Major Body Areas involved in Burns, n (%)					p-value
	Head Neck Face 7 (12.5)	Trunk 3 (5.3)	Arms And Hands 19 (33.9)	Legs And Feet 5 (8.9)	Multiple Sites 22 (39.2)	
Anxiety in Burn patients	6 (85.7)	3 (100)	17 (89.4)	4 (60)	20 (90.9)	<0.01
Depression in Burn patients	3 (57.1)	2 (66.8)	10 (57.8)	1 (20)	14 (72)	<0.01

Fourteen (72.7%) of participants with multiple site burn injuries presented with depression, 10 (57.8%) of participants with arms and hand burn injury, 3 (57.1%) of participants with head, neck and face burns while 2 (66.6%) participants with burn injuries to trunk and 1 (20%) of participants with burn injuries to leg and feet presented respectively with depression. Twenty three

arms and hands in 33.9% while only 12,5% of participants sustained injuries to head neck and face as compared to the results of study done by Loncar that noted burn injuries to head and face in 53% of participants[13]. Results of this study are also different from the results of study by Alvi that shows burn injuries on multiple sites in 56% of participants, 16% burn injuries to head

neck and face, 14% burn injuries to leg and feet while only 12% sustained burn injuries to arm and hand[7].

In this study it is noted that in 83.9% of participants total body surface area involved in burn injury was up to 25% similar results are seen in study done by Fauerbach[14], but these results are different from the result of study done by duke *et al*, that has shown that total body surface area involved in burn injury was up to 25% in 46% of participants[15]. On the contrary there is a study by Vetrichevvel *et al*, that has noted that in 59% of participants the total body surface area involved after burn was >25%[16].

Burn injuries due to flame is seen in 51.7% and scalds in 33.9% of participants. Similar results were seen in study done by Alvi in which 78.9% of burn injuries were due to flame injuries, 71% had electric burns as compared to 5% in this study, 46.1% of participants sustained burn injuries due to bomb blast as compared to 3% of participants in this study but only 25% of participants of their study had scalds[7].

Duke *et al*, in his study has noted that 32.6% develop anxiety after burn injuries while 27.8% develop depression[15]. Alvi in her study reported that 82% of individuals with burn injuries develop anxiety while 58% individuals with burn injuries develop depression[7]. In this study 89% of participants developed anxiety after burn injuries, out of which 51% had moderate, 32% had mild and only 8% had severe anxiety as compared to the results of study done by Alvi in which 22% had moderate, 28% had mild while 34% of individuals had severe level of anxiety[7]. Similar results of study by Loncar show that 24% had moderate anxiety, 67% had mild while only 8% of individuals with burn injuries develop severe anxiety[13].

Wiechman has noted that 43% of individuals with burn injuries develop moderate to severe depression[17]. Similarly Dalal and Manu noted that 48% of individual with burn injuries develop moderate to severe depression[18]. Fauerbach notes that 54% of individuals with burn injuries develop anxiety while 28% develop depression[14]. According to Loncar 49% of individuals with burn injuries develop depression out of which 20% had mild depression, 21% had moderate depression while 7% had severe level of depression[13]. Alvi has noted that 58% of individuals with burn injuries develop depression out of which 28% had mild level of depression, 14% had moderate while 18% had severe level of depression[7]. In this study 53% of individuals with burn injuries developed depression out of which 53.5% of participants had mild level of depression, 33.9% had moderate depression while only 12.5% of participants developed severe level of depression.

Significant correlation has been noted by Loncar between total body surface area involved due to burn injury and depression and anxiety[13]. In this study 55.3% of participants who had up to 25% of total body surface area involved after burn injury develop depression while 78.7% of participants developed anxiety.

Management of a patient with burn has always been challenging. There have been great achievements in management of burn patients with advancing technologies. With all these measures there has been significant reduction in both morbidity and mortality among the burn patients and they are returning early to their jobs. But all these measures take care of physical aspects of the injury and in developing countries like ours, the psychiatric aspect of burn injuries have been underrated. Mental health issues deserve special attention along with better understanding of the pathophysiology and systemic and local effects of burn on the body.

RECOMMENDATION

The management of burn patients should be based on team approach and early involvement of psychiatrist should be routine practice for detection and proper management of anxiety and depression in burn patients.

CONCLUSION

The burn patients have a very high prevalence of anxiety and depression. Studies have highlighted the importance of early detection and timely management of anxiety and depression in burn patients. This can only be done with close co-ordination among the various specialties involved in the management of this ailment. This further highlights the importance of coordinated multifaceted approach towards the burn management specially early involvement of psychiatrist should be routine practice for detection and proper management of anxiety and depression in burn patients.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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