

## Relationship between Burn Scar And anxiety, Depression & Self-Esteem among Patients with Moderate Degree Burn

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**Abstract:** Burns are one of the leading causes of death and disability worldwide. It is a sudden and unpredictable form of trauma which affects the victim both physically and psychologically. **Aim** The aim of the study was to assess the relationship between wound scar and anxiety, depression & self-esteem among patients with moderate degree burn.

**Design:** A descriptive correlation research design was utilized for this study.

**Setting:** The study was conducted at the burn unit of the Alexandria Main University Hospital, Egypt.

**Subjects:** The subjects of the study comprised a convenience sample of 50 adult patients with moderate degree burn. **Tools:** Three tools were used to collect the necessary data.

**Tool I,** Burn scar observational checklist.

**Tool II,** Hospital anxiety and depression scale (HADS).

**Tool III,** Rosenberg Self-esteem Scale (RSES).

**Results:** Results of the study showed that, more than one third 36% of burned patients with burn scar had severe anxiety; half of them 50% had severe depression and the majority of patients 88% were experienced low self-esteem by the 8<sup>th</sup> week of follow up.

**Conclusion:** It can be concluded that, a positive relationship was found in patients with moderate degree burn who had burn scar and high levels of anxiety, depression & low self-esteem.

**Keywords:** Burn scar, Anxiety, Depression, Self-esteem.

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### I. Introduction

Burn injuries are defined as an unforeseen accident or injury caused by heat, electricity, chemicals, and radiation which may exert both physical and psychological impact. Burn injuries are considered as the fourth of most frequent traumatic injuries as reported by World Health Organization (WHO). Worldwide, burns and fires account for more than 300,000 deaths and almost 11 million people a year require burn related medical attention<sup>(3)</sup>. Prevalence rates of head and neck involvement vary internationally between 6% and 60%<sup>(1-7)</sup>.

The most common problems faced by burn injury patients are pain, anxiety, depression, post-traumatic stress disorder, concern about bodily disfigurement, social isolation and financial burden due to the prolonged duration of hospitalization and treatment required<sup>(8)</sup>. Scarring and contractures are among the most common and difficult sequels to treat in burn injury. Scars in visible areas are associated with social anxiety, avoidance and poor quality of life; in contrast to visibility, severity of scar was not associated with distress<sup>(9)</sup>. Burns affect the patient in many ways, it does not only affect their physical appearance rather it has been shown to affect their psychological well-being. So, psychological and physical problems after burn injuries lead to depression, anxiety, fear from social life, physical discomfort and pain<sup>(10)</sup>.

Psychological impairment has found to be present in 45.5% and 40% at baseline and follow up assessments<sup>(11)</sup>. The prevalence of mild to moderate symptoms of depression are present in 23% to 26%, while major depression in 4% to 10%<sup>(12)</sup>. Moreover, 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<sup>(13)</sup>.

It is conceivable that a visible burn affects someone's physical appearance, and alteration in body appearance may be significant factor affecting self-esteem. Self-esteem refers to an evaluative self-view and is a part of the broader self-concept, whereas physical appearance is considered a domain-specific part of self-esteem, and consequently may be associated with depression<sup>(14, 15)</sup>.

Depending upon the nature and severity of burns, patients would require both therapeutic and emotional support to deal with the pain, scarring and body disfigurement. Such trauma challenges their functional, emotional and social wellbeing resulting in a disturbed mental state<sup>(16)</sup>. In fact patients with burn

injuries experience a series of traumatic assaults to the body and mind, which may present with varied psychological symptoms; ranged from mild ones to severe ones, which represent extraordinary challenges to the nurses in order to help them to be well-adjusted<sup>(17)</sup>. Hence, the aim of this study was to assess the relationship between burn scar and anxiety, depression & self-esteem among patients with moderate degree burn.

### **I.1 The aim of this study:**

This study aims to assess the relationship between burn scar and anxiety, depression & self-esteem among patients with moderate degree burn.

### **I. 2. Research Questions:**

- What is the relationship between burn scar and anxiety among patients with moderate degree burn?
- What is the relationship between burn scar and depression among patients with moderate degree burn?
- What is the relationship between burn scar and self-esteem among patients with moderate degree burn?

## **II. Materials And Method**

### **II.1 MATERIALS**

**II.1.1.Design:** A descriptive correlation research design was utilized for this study.

**II.1.2.Setting:** The study was conducted at the burn unit of the Alexandria Main University Hospital, Egypt.

**II.1.3.Subjects:** A convenience sample of 50 adult patients with moderate burn injuries (Second and third degrees) was taken to collect the necessary data. The study sample was estimated based on Epi info program which used to estimate the sample size using the following parameters:

- Total population size is 100 patients.
- Expected frequency 50%.
- Marginal errors 10%.
- Confidence coefficient 99%.
- Minimum sample size 40.

### **Inclusion criteria for patients were as the following:**

- Age: adult 18-60 years.
- Newly admitted burned patients with recent moderate burn injury which include; second degree burns of 15% - 25% of total body surface area (TBSA), third degree burn of 1 – 10% of TBSA, who agreed of being interviewed with the period from 1-8 weeks post burn injury.
- Patients diagnosed with psychiatric disorders before burn injury were excluded from the study.

**II.1.4.TOOLS:** Three tools were used to collect the necessary data.

### **Tool One: Burn scar observational checklist:**

This tool was developed by the researchers after reviewing the related literature<sup>(18, 19)</sup>, to assess the morphological changes of burn scar. It included three parts:

#### **Part I: Socio-demographic data:**

It included socio-demographic data of the studied patients such as age, sex, marital status, residence area, level of education, occupation before injury and the monthly income.

#### **Part II: Parameters of burn injury:**

This part included items related to cause of burn injury, total body surface area, degree of burn injury, depth of burn injury and sites of burn.

#### **Part III: Burn scar evaluation sheet:**

This part included morphological changes of burn scar in relation to healthy granulation, proliferation of epithelialization, scar tissue, surface roughness, vascularity and the pliability.

### **Tool two: Hospital anxiety and depression scale (HADS):**

This tool was developed by Zigmond and Snaith (1983)<sup>(20)</sup>. It is a standardized instrument for assessing the presence and severity of symptoms of anxiety and depression, which a person is experiencing. The HADS includes fourteen multiple choice questions covering two dimensions according to the following; seven of the items related to anxiety and seven related to depression.

**The items on the questionnaire that related to anxiety were:**

- I feel tense or wound up.
- I get a sort of frightened feeling as if something bad is about to happen.
- Worrying thoughts go through my mind.
- I can sit at ease and feel relaxed.
- I get a sort of frightened feeling like butterflies in my stomach.
- I feel restless as if I have to be on the move.
- I get sudden feelings of panic.

**The items on the questionnaire that related to depression were:**

- I still enjoy the things I used to enjoy.
- I can laugh and see the funny side of things.
- I feel cheerful.
- I feel as if I am slowed down.
- I have lost interest in my appearance.
- I look forward with enjoyment to things.
- I can enjoy a good book or radio or TV program.

**Scoring system:**

All questions have 4 choices ranging from 0 to 3 points, but the responses are not identical for all items. HADS-A and HADS-D subscale scores ranged from 0-21 (derived by summing the 7 items on each subscale). For both sub-scales, scores in the range of 0-7 were considered normal; 8-10 mild; 11-14 moderate and 15-21 severe, for either anxiety or depression. Validity and reliability of the Hospital Anxiety and Depression Scale (HADS) were tested by Bjelland(2002)<sup>(21)</sup> and Abd-Elsalam(2012)<sup>(22)</sup>. The HADS proved to be valid. The mean Cronbach's coefficient alpha was 0.81.

**Tool three: Rosenberg Self-Esteem Scale (RSES)<sup>(23)</sup>**

This tool was used to assess self-esteem. It is a 10-item likert-type scale with items scored on a 4-point scale, ranging from 'strongly agree' to 'strongly disagree'. Five of the items have positively worded statements and five have negatively worded ones. Scores of negatively worded statements are reversed. The scale measures state of self-esteem by asking the respondents to reflect on their current feelings.

**Scoring system:**

The scale score ranges from 0-30. Scores between 15 and 25 are within normal range and scores below 15 suggest low self-esteem. Validity and reliability of the Rosenberg Self-Esteem Scale (RSES) were tested by Schmitt and Allik(2005)<sup>(24)</sup>. The RSES proved to be valid. The mean Cronbach's coefficient alpha was 0.81.

**II.2 METHOD**

- An official letter from the Faculty of Nursing, Alexandria University was submitted to the directors of Alexandria Main University Hospital and the head of the burn unit for obtaining permission to carry out the study after complete explanation of the study aim.
- Tool I was developed after reviewing of the current related literature<sup>(18, 19)</sup>.
- Tools II and III were adopted from Hospital anxiety and depression scale (HADS) and Rosenberg Self-Esteem Scale (RSES)<sup>(20, 23)</sup>.
- Tool I was revised by five experts in the field of Medical Surgical Nursing, to test the content validity, completeness and clarity of the items. Accordingly, the necessary modifications were carried out.
- The reliability of the developed tool (tool I) was tested by using Cronbach's coefficient alpha statistical test. Its value was 0.86.
- A pilot study was conducted on five patients to test clarity, feasibility, applicability of the study tool, and necessary modifications were done.
- The researchers introduced themselves to every patient and explained the purpose of the study.
- Each patient was assessed initially in relation to burn parameters and burn scar by observation, examination of the burn injury and from the patient's hospital file, using tool I. Also initial individualized interview was done to assess anxiety, depression and self-esteem, using tool II and III.
- The interview ranged from 30-45 minutes for each patient.
- Data was obtained in the morning and afternoon shifts.
- The burn scar was assessed, and follow up was done for a period of 8 weeks, once per week.

- Individualized interview was done at the 8<sup>th</sup> week, to assess anxiety, depression and self-esteem using tool II and III.
- The data was collected throughout a period of three months from January 2017 to the end of March 2017.

#### **Ethical Considerations:**

- A written informed consent was obtained from all patients participating in the study.
- Confidentiality of data was maintained.
- The anonymity and privacy of patients were ascertained.
- Patients have the right to withdraw at any time from the study.

#### **Statistical analysis of the data:**

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). Qualitative data were described using number and percent. Quantitative data were described using range (minimum and maximum), mean, and standard deviation. Significance of the obtained results was judged at 5% level.

#### **The used tests were:**

##### **1 - Chi-square test:**

For categorical variables, to compare between different periods.

##### **2 - Fisher's Exact or Monte Carlo correction:**

Correction for chi-square when more than 20% of the cells have expected count less than 5.

##### **3 - F-test (ANOVA):**

For normally distributed quantitative variables, to compare between more than two periods, and Post Hoc test (Tukey) (LSD) for pairwise comparisons.

##### **4 - ANOVA with repeated measures:**

For normally distributed quantitative variables, to compare between more than two periods or stages, and Post Hoc test (LSD) (Bonferroni adjusted) for pairwise comparisons.

##### **5 – Cochran's test:**

For abnormally distributed quantitative variables, to compare between two periods or stages, Sig bet. Periods was done using (Dunn's for pairwise comparisons test).

### **III. Results**

**Table (1): Percentage distribution of the studied patients according to socio-demographic data.** The results revealed that the highest percentage of the studied patients were in the age group from 40 to > 50 years old, married, had secondary education, from rural areas, manual workers and had no enough monthly income (50%, 60%, 50%, 52%, 44%, and 84% respectively).

**Table (2): Percentage distribution of the studied patients according to burn parameters.** The results showed that, dry heat was the highest cause of burn 50% followed by scald burn 36%. In relation to percentage of burn, half of studied patients 50% had 10> 20%, and nearly two thirds 60% had second degree burn. Regarding depth of burn, an equal percentage 40% had deep partial thickness and full thickness burn. Concerning sites of burn, the highest percentage of burn injury was in anterior trunk 80% followed by face, right thigh, left thigh, right leg, right foot, left foot, and posterior trunk ( 78%, 70%, 60%, 50%, 40%, 36%, and 32% respectively).

**Table (3): Comparison between the different periods according to morphological changes in burn scar in the 8 weeks of follow up.** There was statistical significant difference between different periods from 1<sup>st</sup> week to 8<sup>th</sup> week; concerning healthy granulation, proliferation of epithelialization, scar tissue, surface roughness, vascularity and pliability ( $P < 0.001$ ).

**Table (4): Percentage distribution of the studied patients according to hospital anxiety & depression scale in 1<sup>st</sup> and 8<sup>th</sup> weeks.** It was observed that, in the 1<sup>st</sup> week, 10% of patients had severe anxiety, followed by more than one third of burned patients 40% had moderate anxiety, with a mean score of  $10.08 \pm 1.29$ . On the other hand, in the 8<sup>th</sup> week, half of burned patients 50% had severe anxiety, followed by nearly one third of burned patients had moderate anxiety, with a mean score of  $14.08 \pm 3.29$ . Concerning depression, in the 1<sup>st</sup> week, 10% of patients had severe depression score, followed by 24% had moderate anxiety, with a mean score of  $9.51 \pm 3.20$ . On the other hand, in the 8<sup>th</sup> week, more than one third of burned patients 36% had severe depression, followed by one third of burned patients 34% had moderate depression, with a mean score of  $12.58 \pm 4.26$ .

**Table (5): Percentage distribution of the studied patients according to the Rosenberg self-esteem scale in 1<sup>st</sup> and 8<sup>th</sup> weeks.** The results revealed that, in the 1<sup>st</sup> week, 40% of patients had low self-esteem with

mean score of  $13 \pm 7.80$ . On the other hand, in the 8<sup>th</sup> week, the majority of studied patients 88% had low self-esteem with a mean score of  $9.24 \pm 3.92$ .

**Table (6): Relationship between anxiety and burn parameters.** The results showed that, there were a significant relation between severity of anxiety and burn parameters as percentage of burn, degree of burn, depth of burn and sites of burn ( $P= 0.050, <0.001, <0.001, <0.001$  respectively).

In relation to percentage of burn, more than one third of patients 44.4% who had burn 20 – 25 % of total body surface area (TBSA), experienced severe anxiety. Concerning degree of burn, an equal percentage of patients 88.9% suffering from severe anxiety had second and third degree burn. Also the highest percentage of the studied patients 88.9% suffering from severe anxiety had full thickness burn. Finally, the majority of patients 88.9 % who had burn in face and anterior trunk had severe anxiety.

**Table (7): Relationship between depression and burn parameters.** It was observed that, there were a significant relation between severity of depression and burn parameters as percentage of burn, degree of burn, depth of burn and sites of burn ( $P= 0.050, <0.001, <0.001, <0.001$  respectively).

In relation to percentage of burn, the highest percentage of patients 56% who had burn 20 – 25 % of TBSA was suffering from severe depression. Concerning degree and depth of burn, all patients who were suffering from severe depression had third degree and full thickness burn. Finally, all patients who experienced severe depression found to have burn in visible areas as face and anterior trunk.

**Table (8): Relationship between Rosenberg self-esteem scale and burn parameters.** The results revealed that, there were a significant relation between low self-esteem and burn parameters as percentage of burn, degree of burn, depth of burn and sites of burn ( $P= 0.014, 0.002, 0.001, <0.001$  respectively).

In relation to burn parameters, a highest percentage of patients who had burn 20 – 25 % of TBSA, third degree burn, full thickness burn and burn in visible areas as face and anterior trunk were experienced low self-esteem (52.2%, 68.2%, 68.2%, 90.9%, 90.9% respectively).

**Table (9): Relationship between burn scar and total anxiety, depression and self- esteem.** The results showed that, there were a positive significant relation between burn scar and severity of anxiety, depression and low self- esteem in relation to healthy granulation, proliferation of epithelialization, scar tissue, surface roughness, vascularity and pliability.

**Table (1): Percentage distribution of the studied patients according to socio-demographic data.**

Socio-demographic data	Studied patients (n=50)	
	No.	%
<b>Age (years)</b>		
20 -	8	16.0
30 -	10	20.0
40 -	25	50.0
50-60	7	14.0
Min. – Max.	17.0 – 60.0	
Mean $\pm$ SD.	36.32 $\pm$ 13.12	
<b>Sex:</b>		
Male	25	50.0
Female	25	50.0
<b>Marital status:</b>		
Single	18	36.0
Married	30	60.0
Divorced	2	4.0
Widow	0	0.0
<b>Level of education:</b>		
Illiterate	5	10.0
Read and write	10	20.0
Primary & prep education	4	8.0
Secondary education	25	50.0
University education	6	12.0
<b>Residence area:</b>		
Urban	24	48.0
Rural	26	52.0
<b>Occupation:</b>		
Manual worker	22	44.0
House wife	20	40
Employee	5	10.0
Not working	3	6.0
<b>Monthly income:</b>		
Enough	8	16
Not enough	42	84

**Table (2): Percentage distribution of the studied patients according to burn parameters**

Burn parameters	Studied patients (n=50)	
	No	%
<b>Cause of burn</b>		
Dry heat	25	50.0
Scald	18	36.0
Chemical	4	8.0
Electric	3	6.0
<b>Percentage of burn:</b>		
1-	10	20.0
10-	25	50.0
20- 25	15	30.0
Min. – Max.	10.0 – 100.0	
Mean ± SD.	32.42 ± 17.93	
<b>Degree of burn: #</b>		
First	0	0.0
Second	30	60.0
Third	20	40.0
<b>Depth of burn: #</b>		
Superficial partial thickness	10	20.0
Deep partial thickness	20	40.0
Full thickness	20	40.0
<b>Sites of burn: #</b>		
Face	39	78.0
Anterior trunk	40	80.0
Posterior trunk	16	32.0
Right buttock	13	26.0
Left buttock	13	26.0
Right thigh	35	70.0
Left thigh	30	60.0
Right leg	25	50.0
Right foot	20	40.0
Left foot	18	36.0
Others	12	24.0

# means that, more than one item was selected

**Table (3): Comparison between the different periods according to morphological changes in burn scar in the 8 weeks of follow up**

Morphological changes in burn scar	1 <sup>st</sup> week		2 <sup>nd</sup> week		3 <sup>rd</sup> week		4 <sup>th</sup> week		5 <sup>th</sup> week		6 <sup>th</sup> week		7 <sup>th</sup> week		8 <sup>th</sup> week		Q (p)
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
<b>Healthy granulation</b>																	
No	50	100.0	41	82.0	23	46.0	14	28.0	18	36.0	31	62.0	44	88.0	48	96.0	138.835* (<0.001*)
Yes	0	0.0	9	18.0	27	54.0	36	72.0	32	64.0	19	38.0	6	12.0	2	4.0	
<b>p<sub>1</sub></b>			0.044*		<0.001*		<0.001*		<0.001*		<0.001*		0.050*		0.054*		
<b>Proliferation of epithelial</b>																	
No	50	100.0	49	98.0	49	98.0	45	90.0	44	88.0	33	66.0	31	62.0	31	62.0	85.728* (<0.001*)
Yes	0	0.0	1	2.0	1	2.0	5	10.0	6	12.0	17	34.0	19	38.0	19	38.0	
<b>p<sub>1</sub></b>			0.769		0.769		0.042		0.059*		<0.001*		<0.001*		<0.001*		
<b>Scar tissue</b>																	
No	50	100.0	48	96.0	38	76.0	21	42.0	8	16.0	0	0.0	0	0.0	0	0.0	261.636* (<0.001*)
Yes	0	0.0	2	4.0	12	24.0	29	58.0	42	84.0	50	100.0	50	100.0	50	100.0	
<b>p<sub>1</sub></b>			0.693		0.018*		<0.001*		<0.001*		<0.001*		<0.001*		<0.001*		
<b>Surface roughness</b>																	
No	50	100.0	50	100.0	49	98.0	32	64.0	20	40.0	6	12.0	0	0.0	2	4.0	Q=259.419* (<0.001*)
Yes	0	0.0	0	0.0	1	2.0	18	36.0	30	60.0	44	88.0	50	100.0	48	96.0	
<b>p<sub>1</sub></b>			1.000		0.845		<0.001*		<0.001*		<0.001*		<0.001*		<0.001*		
<b>Pliability</b>																	
No	50	100.0	50	100.0	46	92.0	36	72.0	22	44.0	10	20.0	18	36.0	18	36.0	Q=266.419* (<0.001*)
Yes	0	0.0	0	0.0	4	8.0	14	28.0	28	56.0	40	80.0	32	64.0	32	64.0	
<b>p<sub>1</sub></b>			1.000		0.408		0.004*		<0.001*		<0.001*		<0.001*		<0.001*		
<b>Vascularity</b>																	
No	50	100.0	50	100.0	48	96.0	43	86.0	21	42.0	8	16.0	2	4.0	6	12.0	Q=249.582* (<0.001*)
Yes	0	0.0	0	0.0	2	4.0	7	14.0	29	58.0	42	84.0	48	96.0	44	88.0	
<b>p<sub>1</sub></b>			1.000		0.693		0.057		<0.001*		<0.001*		<0.001*		<0.001*		

Q: Cochran's test, Sig bet. Periods was done using (Dunn's for multiple comparisons test) p<sub>1</sub>: p value for comparing between 1<sup>st</sup> week and each other periodp: p value for comparison between different periods \*: Statistically significant at p ≤ 0.05

**Table (4): Percentage distribution of the studied patients according to Hospital Anxiety & Depression Scale (HADS) in 1<sup>st</sup> and 8<sup>th</sup> week (n = 50)**

Hospital Anxiety & Depression scale	Studied patients (n=50)			
	1 <sup>st</sup> week		8 <sup>th</sup> week	
	No.	%	No.	%
<b>Hospital anxiety:</b>				
Normal (0 – 7)	5	10.0	0	0.0
Mild (8 – 10)	20	40.0	10	20.0
Moderate (11 – 14)	20	40.0	15	30.0
Severe (15- 21)	5	10	25	50
Min. – Max.	6.0 – 10.0		8.0 – 20.0	
Mean ± SD.	10.08 ± 1.29		14.08 ± 3.29	
<b>Depression:</b>				
Normal (0 – 7)	15	30.0	7	14.0
Mild (8 – 10)	18	36.0	8	16.0
Moderate (11 – 14)	12	24.0	17	34.0
Severe (15 – 21)	5	10.0	18	36.0
Min. – Max.	3.0 – 2.28		5.0 – 4.26	
Mean ± SD.	9.51±3.20		12.58 ± 4.26	

**Table (5): Percentage distribution of the studied patients according to Rosenberg Self-esteem Scale in 1<sup>st</sup> and 8<sup>th</sup> week (n = 50)**

The Rosenberg Self-esteem Scale	Studied patients (n=50)			
	1 <sup>st</sup> week		8 <sup>th</sup> week	
	No.	%	No.	%
Low self-esteem(<15)	20	40.0	44	88.0
Normal self-esteem(15-25)	30	60.0	6	12.0
Min. – Max.	6.0- 22.0		3.0 – 17.0	
Mean ± SD	13± 7.80		9.24 ± 3.92	

**Table (6): Relationship between anxiety and burn parameters (n = 50)**

Burn parameters	Anxiety								Test of sig.	P
	Normal (0-7)		Mild (8 – 10)		Moderate (11-14)		Severe (15 – 21)			
	No.	%	No.	%	No.	%	No.	%		
<b>Percentage of burn:</b>										
1-	1	14.3	3	37.5	6	35.3	0	0.0	$\chi^2=2.197$	$MC_p=0.050^*$
10-	4	57.1	2	25.0	1	5.9	4	22.2		
20- 25	2	28.6	3	37.5	2	11.8	8	44.4		
Min. – Max.	15.0 – 35.0		10.0 – 35.0		10.0 – 50.0		20.0 – 100.0		F=2.745	0.050*
Mean ± SD.	24.29±6.73		23.13±10.33		32.12±14.87		40.0±23.01			
<b>Degree of burn: #</b>										
First	0	0.0	0	0.0	0	0.0	0	0.0	$\chi^2=13.684^*$	$MC_p<0.001^*$
Second	4	57.1	5	62.5	13	76.5	16	88.9		
Third	3	42.9	3	37.5	13	76.5	16	88.9		
<b>Depth of burn: #</b>										
Superficial partial thickness	1	14.3	2	25.0	5	29.4	2	11.1	$\chi^2=6.554^*$	$MC_p=0.025^*$
Deep partial thickness	3	42.9	3	37.5	8	47.1	14	77.7	$\chi^2=16.833^*$	$MC_p<0.001^*$
Full thickness	3	42.9	3	37.5	13	76.5	16	88.9	$\chi^2=9.114^*$	$MC_p=0.014^*$
<b>Sites of burn: #</b>										
Face	3	42.9	4	50.0	4	23.5	16	88.9	$\chi^2=30.037^*$	$MC_p<0.001^*$
Anterior trunk	1	14.3	4	50.0	4	23.5	16	88.9	$\chi^2=30.037^*$	$MC_p<0.001^*$
Posterior trunk	4	57.1	3	37.5	3	17.6	9	50.0	$\chi^2=2.849$	$MC_p=0.248$
Right buttock	1	14.3	3	37.5	3	17.6	9	50.0	$\chi^2=1.054$	$MC_p=0.692$
Left buttock	1	14.3	3	37.5	3	17.6	9	50.0	$\chi^2=1.054$	$MC_p=0.692$
Right thigh	4	57.1	5	62.5	5	29.4	4	22.2	$\chi^2=1.355$	$MC_p=0.507$
Left thigh	4	57.1	4	50.0	4	23.5	4	22.2	$\chi^2=0.644$	$MC_p=0.824$
Leg	4	57.1	5	62.5	5	29.4	9	50.0	$\chi^2=0.959$	$MC_p=0.678$
Foot	2	28.6	2	25.0	4	23.5	4	22.2	$\chi^2=0.762$	$MC_p=0.740$
Others	5	71.4	8	100.0	8	100	4	22.2	$\chi^2=2.493$	$MC_p=0.238$

# means that, more than one item was selected

$\chi^2$ : Chi square test      MC: Monte Carlo      F: F for ANOVA test

p: p value for comparing between the three groups

\*: Statistically significant at  $p \leq 0.05$

**Table (7): Relationship between depression and burn parameters (n = 50)**

Burn parameters	Depression						Test of sig.	P
	Mild (8 – 10)		Moderate (11 – 14)		Severe (15 – 21)			
	No.	%	No.	%	No.	%		
<b>Percentage of burn:</b>								
1-	4	40.0	3	20.0	3	12.0	$\chi^2=3.197$	MC p=0.050*
10-	3	30.0	4	26.7	8	32.0		
20- 25	3	30.0	8	53.3	14	56		
Min. – Max.	10.0 – 35.0		15.0 – 45.0		15.0 – 100.0		F=3.745	0.050*
Mean $\pm$ SD.	21.6 $\pm$ 9.5		30.0 $\pm$ 11.3		38.2 $\pm$ 21.5			
<b>Degree of burn: #</b>								
First	0	0.0	0	0.0	0	0.0	-	-
Second	6	60.0	10	66.7	20	80.0	$\chi^2=8.631^*$	MC p=0.012*
Third	4	40.0	5	33.3	25	100.0	$\chi^2=24.282^*$	MC p<0.001*
<b>Depth of burn: #</b>								
Superficial partial thickness	1	10.0	2	13.3	6	24.0	$\chi^2=6.554^*$	MC p=0.025*
Deep partial thickness	5	50.0	8	53.3	14	56	$\chi^2=16.833^*$	MC p<0.001*
Full thickness	4	40.0	5	33.3	25	100	$\chi^2=9.114^*$	MC p=0.014*
<b>Sites of burn: #</b>								
Face	1	10.0	4	26.7	25	100.0	$\chi^2=30.037^*$	MC p<0.001*
Anterior trunk	1	10.0	4	26.7	25	100.0	$\chi^2=30.037^*$	MC p<0.001*
Posterior trunk	4	40.0	3	20.0	9	36.0	$\chi^2=2.849$	MC p=0.248
Right buttock	1	10.0	3	20.0	9	36.0	$\chi^2=1.054$	MC p=0.692
Left buttock	1	10.0	3	20.0	9	36.0	$\chi^2=1.054$	MC p=0.692
Right thigh	4	40.0	5	33.3	16	64.0	$\chi^2=1.355$	MC p=0.507
Left thigh	4	40.0	4	26.7	16	62.9	$\chi^2=0.644$	MC p=0.824
Leg	4	40.0	5	33.3	16	64.0	$\chi^2=0.959$	MC p=0.678
Foot	2	20.0	4	26.7	14	56.0	$\chi^2=0.762$	MC p=0.740
Others	5	50.0	8	53.3	16	64.0	$\chi^2=2.493$	MC p=0.238

# means that, more than one item was selected

$\chi^2$ : Chi square test      FE: Fisher Exact

p: p value for comparing between the two groups

t: t-test of significance

\*: Statistically significant at  $p \leq 0.05$

**Table (8): Relationship between Rosenberg self-esteem scale and burn parameters (n = 50)**

Burn parameters	Rosenberg self-esteem scale				Test of sig.	P
	Low Self-Esteem (<15)		Normal Self-Esteem (15-25)			
	No.	%	No.	%		
<b>Percentage of burn:</b>						
1-	8	18.2	2	33.3	$\chi^2=2.682$	MC p=0.014*
10-	13	29.6	2	33.3		
20- 25	23	52.2	2	33.3		
Min. – Max.	10.0 – 100.0		10.0 – 35.0		t=2.282	0.015*
Mean $\pm$ SD.	33.89 $\pm$ 18.25		21.67 $\pm$ 11.25			
<b>Degree of burn: #</b>						
First	0	0.0	0	0.0	-	-
Second	27	61.4	2	33.3	$\chi^2=2.362$	FE p=0.199
Third	30	68.2	6	100	$\chi^2=10.227^*$	FE p=0.002*
<b>Depth of burn: #</b>						
Superficial partial thickness	8	18.2	0	0.0	$\chi^2=4.365$	FE p=0.058
Deep partial thickness	19	43.1	2	33.3	$\chi^2=14.489$	FE p=0.001*
Full thickness	30	68.2	6	100	$\chi^2=6.294^*$	FE p=0.023*
<b>Sites of burn: #</b>						
Face	40	90.9	1	16.7	$\chi^2=17.093$	FE p=0.001*
Anterior trunk	40	90.9	0	0.0	$\chi^2=27.273$	FE p<0.001*
Posterior trunk	14	31.8	2	33.3	$\chi^2=0.006$	FE p=1.000
Right buttock	11	25.0	2	33.3	$\chi^2=0.191$	FE p=0.643



Left buttock	11	25.0	2	33.3	$\chi^2=0.191$	FE p=0.643
Right thigh	26	59.1	4	66.7	$\chi^2=0.036$	FE p=1.000
Left thigh	26	59.1	4	66.7	$\chi^2=0.126$	FE p=1.000
Leg	23	52.3	2	33.3	$\chi^2=0.758$	FE p=0.667
Foot	18	40.9	2	33.3	$\chi^2=0.126$	FE p=1.000
Others	18	40.9	4	66.6	$\chi^2=0.930$	FE p=1.000

# means that, more than one item was selected

$\chi^2$ : Chi square test      MC: Monte Carlo      FE: Fisher Exact

p: p value for comparing between the two groups

t: t-test of significance

\*: Statistically significant at  $p \leq 0.05$

**Table (9): Relationship between burn scar and total anxiety, depression and self- esteem.**

Burn scar	Total Anxiety								$\chi^2$	MCp	Depression						$\chi^2$	MCp	Rosenberg self-esteem scales				$\chi^2$	MCp
	Normal (8-10)		Mild (8-10)		Moderate (11-14)		Severe (15-21)				Mild (8-10)		Moderate (11-14)		Severe (15-21)				Low Self-Esteem (<15)		Normal Self-Esteem (15-25)			
	No.	%	No.	%	No.	%	No.	%			No.	%	No.	%	No.	%			No.	%	No.	%		
<b>Healthy granulation:</b>																								
1 <sup>st</sup> week	0	0.0	0	0.0	0	0.0	0	0.0	-	-	0	0.0	0	0.0	0	0.0	0	0.0	-	-	-	-		
8 <sup>th</sup> week	0	0.0	0	0.0	2	11.8	0	0.0	12.825	0.010*	1	10.0	1	6.7	25	100	12.726	MCp=0.041*	0	0.0	0	0.0	10.284	0.042*
<b>Proliferation of epithelial:</b>																								
1 <sup>st</sup> week	0	0.0	0	0.0	0	0.0	0	0.0	-	-	0	0.0	0	0.0	0	0.0	-	-	0	0.0	0	0.0	-	-
8 <sup>th</sup> week	4	57.1	8	100.0	3	17.6	4	22.2	18.870*	<0.001*	10	100.0	5	33.3	4	16.0	22.084*	MCp<0.001*	15	34.1	4	66.7	12.378	0.014*
<b>Scar tissue:</b>																								
1 <sup>st</sup> week	0	0.0	0	0.0	0	0.0	0	0.0	-	-	0	0.0	0	0.0	0	0.0	-	-	0	0.0	0	0.0	-	-
8 <sup>th</sup> week	7	100.0	8	100.0	17	100.0	18	100.0	6.561*	0.018*	10	100.0	15	100.0	25	100.0	8.440	MCp=0.021*	44	100.0	6	100.0	15.278*	0.012*
<b>Surface roughness:</b>																								
1 <sup>st</sup> week	0	0.0	0	0.0	0	0.0	0	0.0	-	-	0	0.0	0	0.0	0	0.0	-	-	0	0.0	0	0.0	-	-
8 <sup>th</sup> week	5	71.4	8	100.0	17	100.0	18	100.0	6.561*	0.018*	10	100.0	13	86.7	25	100.0	8.440	MCp=0.021*	44	100.0	4	66.7	15.278*	0.012*
<b>Pliability:</b>																								
1 <sup>st</sup> week	0	0.0	1	12.5	3	17.6	2	11.1	-	-	1	10	5	33.3	2	8.00	-	-	15	34.1	4	66.7	-	-
8 <sup>th</sup> week	3	42.9	6	75.0	12	70.6	11	61.1	12.130	0.050*	7	70.0	7	46.7	18	72.0	12.807	0.046*	28	63.6	2	33.3	13.021	0.045*
<b>Vascularity:</b>																								
1 <sup>st</sup> week	0	0.0	1	12.5	3	17.6	4	22.2	-	-	1	10.00	5	33.3	2	8.00	-	-	15	34.1	4	66.7	-	-
8 <sup>th</sup> week	5	71.4	8	100.0	17	100.0	14	77.8	6.415*	0.050*	10	100.0	11	73.3	23	92.0	13.820	MCp=0.023*	40	90.9	2	33.3	12.938	0.046*

$\chi^2$ : Chi square test      MC: Monte Carlo

p: p value for association between different categories\*: Statistically significant at  $p \leq 0.05$

#### IV. Discussion

Burn is a sudden and unpredictable form of trauma which affects the victim both physically and psychologically. Burn injuries account for more than 300,000 deaths and almost 11 million people a year worldwide require burn related medical attention. The psychological aspects of burn injury have been researched in different parts of world producing different outcomes<sup>(25, 26)</sup>. Therefore, this research aimed to assess the relation between burn scar and anxiety, depression & self-esteem among moderate degree burned patients.

The present results revealed that, the highest percentage of the studied patients were in the age group 40>50 years old. This can be explained by that this age group is a potential age to remain engaged in high-risk conditions as household injuries, especially in low income patients who tried to deal with any home malfunctioning by themselves, which expose them to fire injuries. This result was in line with Zaidi et al (2017)<sup>(27)</sup>, who found that more than half of the studied patients were more than 30 years old.

In relation to education, the present results revealed that, the highest percentage of the studied patients had secondary education and they were manual workers. This can be explained by, that the occupation of the majority of patients who had secondary education was manual work which exposes them to the risk of fire explosion. This result was in line with Jain et al (2017)<sup>(26)</sup>, who reported that, the majority of the sample were educated up to high school level (class 9-12).

Concerning the cause of burn, it was found that dry heat had the highest percentage among the causes. From the researcher's point of view, this may be due to household activities at the home, especially in patients with low income, in which they use a simple and risky ways of cooking and preparing food. This is in harmony with Khan et al (2016)<sup>(28)</sup>, who found that burns are one of the most common household injuries, over 96% of fatal fire related injuries occur in low- and middle-income countries<sup>(29)</sup>.

The results of the present study showed that, the highest percentage of the studied patients suffered from increased severity of anxiety, depression & low self-esteem by the 8<sup>th</sup> week. From the researchers' opinion this may be due to, patients with burn injuries suffer from an upsetting experience that affects their normal thinking, behavior and lifestyle. Also, burn injury enhances physical and emotional challenges that affect the course of recovery for patients resulting in high anxiety, depression and low self-esteem. In addition, the burn patients were stigmatized to an extent that they lose the capacity to practice normal activities of life and work, due to the presence of burn scar. This is in line with Willebrand et al (2011)<sup>(30)</sup>, who found in their study a statistically significant association between deep burns and anxiety, depression & low self-esteem.

In the current study, the majority of studied patients who had burn 20-25 % of total body surface area, were suffered from severe anxiety, severe depression & low self-esteem. This may be attributed to the worries about the future and return to work, along with the cost of treatment. This result is congruent with results of Morris et al (2010)<sup>(31)</sup>, who found a positive association between total body surface area involved and severity of anxiety. In contrast, other study revealed that the extent of total body surface area (TBSA) involved did not have any bearing on the severity of anxiety, depression and low self-esteem seen in burned patients<sup>(32)</sup>.

The results of this study showed that, the majority of patients with full thickness burn experienced severe anxiety, severe depression & low self-esteem, followed by deep partial thickness burn. This may be interpreted by, that full thickness burn is associated with prolonged time of healing, greater number of procedures, along with the financial costs of treatment, as well as the dressing used can play a role. So, these factors can be reflected on the psychological status of the patients. This result is congruent with results of a study which revealed that, patients with full thickness burns experienced higher levels of anxiety<sup>(30)</sup>.

One of the noticeable results of this study was that, the burn in the visible areas as face and anterior trunk is associated with high levels of anxiety, depression & low self-esteem. This result might be due to fear of disfigurement because the face is our central identity, also the pressure of the society to maintain a desired body image may be a reason for the negative feelings. In addition, the anterior trunk is a visible area for both male and female, so the presence of burn in these areas put psychological pressure on patients. This result comes in harmony with Sousa<sup>(33)</sup>, who stated that the psychological trauma is pronounced if the injuries are inflicted on the face of the victim because face marks a person's identity and any change in its appearance has a deep psychological and social impact.

Concerning healthy granulation, proliferation of epithelialization, scar tissue, surface roughness, vascularity and the pliability, there was a statistically significant relation between them and the high level of anxiety, depression & low self-esteem. This result comes hand in hand with Hoogewerf et al (2014)<sup>(18)</sup>, who reported that, scores on surface roughness showed to be significantly associated with low self-esteem.

## V. Conclusion

### **It can be concluded that:**

A positive relationship was found in patients with moderate degree burn who had burn scar and high levels of anxiety, depression & low self-esteem.

### **I. Recommendations**

#### **It can be recommended that:**

- Greater emphasis should be placed on psychological status of moderate degree burned patients. Those patients would require both therapeutic and emotional support through brief psychotherapy (ie, counseling) to deal with scarring and body disfigurement.
- Routine psychological screening during hospitalization on anxiety, depression and self-esteem is recommended.
- Psychological help for burn patients is still under addressed, and there is a need for psychiatric team in the burns units, to address the psychological needs of burned patients, to successfully reintegrate them into society with a healthy mind and body.
- Further researches are needed to assess the magnitude and predictors of psychological problems in burned patients.

## References

- [1]. Global Burden of Diseases Database. 2002; World Health Organization. (2002).
- [2]. Tagkalakis P, Demiri E. A fear avoidance model in facial burn body image disturbance. *Ann Burns Fire Disasters* 2009; 22: 203–7.
- [3]. Peck D. Epidemiology of burns throughout the world. Part I: Distribution and risk factors. *Burns* 2011; 37(7):1087–100.
- [4]. Ali W, Alaa El-deen S, Saad A. Effect of therapeutic dietary regimen on wound healing for patients with moderate degree burn. *IOSR- JNHS* 2017; 6:65-79.
- [5]. Hoogewerf J, van Baar E, Hop J, Bloemen T, Middelkoop E, Nieuwenhuis MK. Burns to the head and neck: epidemiology and predictors of facial surgery. *Burns* 2013; 39(6):1184–92.
- [6]. Kai-Yang L, Zhao-Fan X, Luo-Man Z. Epidemiology of pediatric burns requiring hospitalization in China: A literature review of retrospective studies. *Pediatrics* 2008; 122(1):132–42.

- [7]. Kara G, Gok S, Horsanlı O, Zencir M. A population-based questionnaire study on the prevalence and epidemiology of burn patients in Denizli, Turkey. *J Burn Care Res* 2008; 29(3):446–50.
- [8]. Lawrence W, Mason T, Schomer K, Klein B: Epidemiology and impact of scarring after burn injury: a systematic review of the literature. *J Burn Care Res* 2012; 33(1): 136-46.
- [9]. Hoogewerf J, van Baar E, Middelkoop E, van Loey E: Impact of facial burns: relationship between depressive symptoms, self-esteem and scar severity. *Gen Hosp Psychiatry* 2014; 36(3): 271-6.
- [10]. Tagkalakis P, Demiri E: A fear avoidance model in facial burn body image disturbance. *Ann Burns Fire Disasters* 2009; 22(4): 203-7.
- [11]. Madianos G, Papaghelis M, Ioannovich J, Dafni R. Psychiatric Disorders in Burn Patients: A Follow-Up Study. *PsychotherPsychosom* 2001; 70:30–7.
- [12]. Thomas D, Bresnick M, Magyar-Russell G, Lawrence W, McCannD, Fauerbach A. Depression in survivors of burn injury: A systematic review. *Gen Hosp Psychiatry* 2006; 28:494–502.
- [13]. Loncar Z, Bras M, Mickovic V. The relationships between burn pain, anxiety and depression. *CollAntropol* 2006; 2: 319–25.
- [14]. Leary R, Baumeister F. The nature and function of self-esteem: Sociometer theory. In: Zanna MP, editor. *Advances in experimental social psychology*, Vol. 32. New York, NY: Academic Press; 2000. 1–62.
- [15]. Swann B, Bosson K. Self and identity. In: Fiske T, Gilbert T, Lindzey G. *Handbook of social psychology*. Hoboken, NY: Wiley; 2010. 589–628.
- [16]. Esselman C, Thombs D, Magyar-Russell G, Fauerbach A. Burn rehabilitation: state of the science. *Am J Phys Med Rehabil* 2006; 85:383-413.
- [17]. Sousa A, Sonavane S, Kurvey A. Psychological issues in adult burn patient. *Delhi Psychiatry Journal* 2013; 16: 24- 33.
- [18]. Hoogewerf C , Baar M, Middelkoop E, Loey N. Patient reported facial scar assessment: directions for the professional. *Burns J* 2014; 40 (2): 347-53.
- [19]. Ahmed H. Effect of Api-Tulle dressing versus the conventional dressing technique on healing of moderate burn. Unpublished Master thesis. Faculty of Nursing, Alexandria University, 2009.
- [20]. Zigmond S, Snaith P. "The hospital anxiety and depression scale". *ActaPsychiatricaScandinavica* 1983. 67 (6): 361–370.
- [21]. Bjelland I. "The validity of the Hospital Anxiety and Depression Scale. An updated literature review". *Journal of Psychosomatic Research* 2002; 52 (2): 69–77.
- [22]. Abd- Elsalim M. Relationship of anxiety, depression and quality of life of breastfeeding cancer patients during adjuvant chemotherapy post mastectomy. Unpublished Master Thesis, Faculty of Nursing, Alexandria University, 2012.
- [23]. Robins R, HendinH, TrzesniewskiK. Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *PersSocPsychol Bull* 2001; 27(2):151– 61.
- [24]. Schmitt D, Allik J. Simultaneous administration of the Rosenberg Self-Esteem Scale in 53 nations: exploring the universal and culture-specific features of global self-esteem. *J PersSocPsychol* 2005; 89 (4): 623-42.
- [25]. Hoogewerf J, Van E, Middelkoop E. Impact of facial burns: relationship between depressive symptoms, self-esteem and scar severity. *Gen Hosp Psychiatry* 2014; 36(3):271-6.
- [26]. Jain M, Khadilkar N, Sousa A. Burn-related factors affecting anxiety, depression and self-esteem in burn patients: an exploratory study. *Ann Burns Fire Disasters* 2017; 30(1): 30–34.
- [27]. Zaidi S, Yaqoob N, Noreen S. Self-esteem in severely burned adults. *Journal of Pakistan Medical Association* 2017; 67(12): 1914-6.
- [28]. Khan A, Solan M. Burns: types, treatments, and more. 2016. Available at:<http://www.healthline.com/health/burns>.
- [29]. Violence and Injury Prevention: Other Injury topics: Burns. 2016. Available at:[http://www.who.int/violence\\_injury\\_prevention](http://www.who.int/violence_injury_prevention).
- [30]. Willebrand M, Ekselius L. Health-related quality of life 2 years to 7 years after burn injury. *J Trauma Acute Care Surg* 2011; 71(5):1435–41.
- [31]. Morris D, Louw A, Crous C. Feasibility and potential effect of a low-cost virtual reality system on reducing pain and anxiety in adult burn injury patients during physiotherapy in a developing country. *Burns* 2010; 36(5): 659–64.
- [32]. Pavoni V, Gianesello L, Paparella L, Buoninsegni L, Barboni E. Outcome predictors and quality of life of severe burn patients admitted to intensive care unit. *Scand J Trauma Resusc Emerg Med* 2010;18(1): 1-9.
- [33]. Sousa A. Psychological issues in acquired facial trauma. *Indian J PlastSurg* 2010; 43:200-5.

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