

## ORIGINAL RESEARCH

# Post-traumatic Stress Disorder in Facial Injuries: A Comparative Study

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## ABSTRACT

**Aim:** The aim of the study was to identify the presence of post-traumatic stress disorder (PTSD) in patients who had sustained facial injuries, additionally, we aimed to identify other variables that may modify the psychological response to trauma that include gender, age and presence of disfigurement post-treatment and visible scars/orthopedic injuries.

**Materials and methods:** Participants comprised of 460 patients from several multinodal trauma centers in Bengaluru City, Karnataka, who had sustained facial injuries that had healed either with or without significant disfigurement or scarring and with visible/orthopedic injuries. One hundred and eleven patients of the chosen 460 had sustained nondisfiguring facial injuries while 153 patients sustained disfiguring facial injuries, 64 patients who sustained facial injury (i.e. 19.5%) were lost to follow-up and were not included in the study. One hundred and thirty-two had sustained orthopedic/visible injuries; however, in this group, 18 (i.e. 13.6%) patients were lost to follow-up and were excluded from the study. The impact of events scale (IES) was used to check the presence of PTSD.

**Results:** Statistically significant higher means of IES were present in patients with disfiguring facial injuries compared to nondisfiguring facial injuries, female patients compared to male patients, patients with disfiguring facial injuries compared to orthopedic/visible injuries and patients who were younger than 50 years of age compared to patients who were older than 50 years of age and the results observed were similar at all three study intervals (date of discharge (DOD), 1 month and 6 months postoperatively).

**Conclusion:** Patients with disfiguring facial injuries had significantly higher PTSD levels compared to patients with nondisfiguring facial injuries, patients with orthopedic/visible injuries had statistically significant lower IES scores which could not be strictly termed PTSD when compared to patients with disfiguring facial injuries who had high scores of IES corresponding to high levels of PTSD and these results were observed at all three study intervals (DOD, 1 and 6 months postoperatively). Female patients with disfiguring facial injuries

had significantly higher PTSD levels compared to male patients (at all the study intervals) and patients younger than 50 years of age had significantly higher PTSD levels compared to older patients.

**Keywords:** Facial injuries, Post-traumatic stress disorder, Trauma.

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## INTRODUCTION

The face or countenance plays an important part in the formation of initial social relationships and the appearance or 'attractiveness' of a person is greatly contributed by the face.<sup>1</sup>

The face can be disfigured secondarily by various causes; facial trauma is, however, the major cause for disfigurement.

Extensive bony and soft-tissue injuries of the face can lead to scarring or disfigurement of the facial region. Common sequelae of facial trauma patients are psychological distress. Surgical and medical care of the trauma patients has progressed significantly over the last century and recent research has elaborated on the psychological aspects of traumatic events.

Our knowledge of the psychological impact of the traumatic events has historically been derived from the observation of military veterans or survivors of disasters.<sup>2</sup> Maxillofacial trauma was recognized by Shepherd et al<sup>3</sup> as an important target for research because of its potential for both physical and psychological disability.

The psychological aspects of maxillofacial trauma are poorly documented in routine clinical practice and unless it is recognized and treated; the psychological problems that arise post-trauma can become chronic.

There has been published data suggesting that post-traumatic stress disorder (PTSD) may develop and range between 26 and 41% of facial trauma victims.<sup>4-6</sup>

Post-traumatic stress disorder is defined in the fourth edition of the diagnostic and statistical manual of mental disorders (DSM-IV)<sup>7</sup> as 'the development of characteristic

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symptoms following exposure to an extreme traumatic stress or involving direct personal experience of an event that involves actual or threatened death or serious injury or other threat to one's or another person's physical integrity'.

The symptoms include persistent re-experiencing of the traumatic event, nightmares, recurrent and intrusive recollections, avoidance of the situations with the traumatic event, sleeplessness and hyper vigilance.<sup>7</sup> The symptoms must also be present for more than 1 month when symptoms are present between 1 and 3 months, PTSD is classified as acute and when symptoms last at least 3 months a chronic classification is given.

The aim of the study was to identify the presence of PTSD in patients who had sustained facial injuries; additionally, we aimed to identify other variables that may modify the psychological response to trauma that include gender, age and presence of disfigurement post-treatment and visible scars/orthopedic injuries.

## MATERIALS AND METHODS

The subjects were recruited over a period of 30 months between December 2011 and July 2014, after approval had been obtained from the Institutional Ethical Committee.

Participants comprised of 460 patients from several multinodal trauma centers in Bengaluru city, Karnataka, who had sustained facial injuries that had healed either with or without significant disfigurement or scarring and with visible/orthopedic injuries. One hundred and eleven patients of the chosen 460 had sustained nondisfiguring facial injuries while 153 patients sustained disfiguring facial injuries; 64 patients who sustained facial injury (i.e. 19.5%) were lost to follow-up and were not included in the study. One hundred and thirty-two had sustained orthopedic/visible injuries; however, in this group, 18 (i.e. 13.6%) patients were lost to follow-up and were excluded from the study.

Grouping of the patients was done as follows:

- *Patients with nondisfiguring facial injuries:*
  - Male: 54
  - Female: 57
  - Total: 111
- *Patients with disfiguring facial injuries: Based on gender—*
  - Male: 81
  - Female: 72
  - Total: 153
- *Patients with orthopedic/visible injuries:*
  - Male: 51
  - Female: 63
  - Total: 114

- *Patients with disfiguring facial injuries: Based on age (total number of patients: 153)—*

Male

- Less than 50 years: 51
- More than 50 years: 30
- Total: 81

Female

- Less than 50 years: 40
- More than 50 years: 32
- Total: 72

The inclusion criteria for those selected in the study were as follows:

- Age—18 years or older
- Glasgow coma scale on Admission—of 12 and above.
- Patients with facial injuries leading to scarring of 3 cm or more.
- Patients with facial injuries leading to facial disfigurement/asymmetry post-treatment.
- Patients with facial injuries with no disfigurement/asymmetry or loss of form and function for a comparative study.
- Patients with a visible scar not covered by clothing on other parts of the body for a comparative study.

The exclusion criteria for those selected in the study were as follows:

- Patients with a history of alcohol dependence.
- Patients with a history of psychological dependence.

The assessments were carried out at three time intervals [date of discharge (DOD), 1 month and 6 months postoperatively] of the follow-up.

The impact of event scale (IES)<sup>8</sup> was used to assess the PTSD; this is a widely used valid and reliable scale and provides for a low-cost short self-report measurement to detect PTSD.<sup>9</sup>

The IES scale consists of 15 items as 7 of which measure intrusive symptoms (intrusive thoughts, nightmares, intrusive feelings and imagery) and 8 of which measure avoidance symptoms (numbing of responsiveness, avoidance of feelings, situations and ideas) and both combined provide a subjective stress score. The responders to the scale rate the items on a four-point scale according to how often each of them occurred in the past 7 days.<sup>10</sup>

### IES Interpretation

- 0-8: No meaningful impact.
- 9-25: Impact event—you may be affected.
- 26-43: Powerful impact event—you are certainly affected.
- 44-75: Severe impact event—this is capable of altering your ability of function.

**Score Consequence**

- Twenty-seven or more: There is a 75% chance that the patient has PTSD.<sup>11</sup> Those who do not have full PTSD may have partial PTSD or at least some of the symptoms.
- Thirty-five and above: This represents the best cut-off for a probable diagnosis of PTSD<sup>12</sup>—a mental health professional skilled to treat such issues should be consulted.

**RESULTS**

**Statistical Analysis**

The statistical analysis was done by Mann-Whitney U-test for determining and comparing the impact of event scores among the patients and the following results were obtained.

Comparison of IES scores between nondisfiguring facial and facial disfiguring injuries (Table 1):

- In patients with nondisfiguring facial injuries the mean score of IES at the DOD was 32.05 (± 7.87) compared to patients with disfiguring facial injuries mean score 48.39 (±10.29) and this was statistically significant.
- In patients with nondisfiguring facial injuries, the mean score of IES at discharge after 1 month was

6.17 (±2.17) compared to patients with disfiguring facial injuries mean score 35.16 (± 12.08) and this was statistically significant.

- In patients with nondisfiguring facial injuries, the mean score of IES at discharge after 6 months was 2.07 (±0.37) compared to patients with disfiguring facial injuries mean score 29.02 (± 13.49) and this was statistically significant.

Comparison of IES scores between nondisfiguring facial and facial disfiguring injuries (males) (Table 2):

- In comparative study between facial nondisfiguring injuries of male patients the mean score of IES of the patients at the DOD was 24.93 (± 5.02) and when compared to patients with disfiguring facial injuries the mean score 42.26 (± 5.16) and this was statistically significant.
- In comparative study between facial nondisfiguring injuries of male patients the mean score of IES after 1 month was 4.56 (± 1.08) and when compared to patients with disfiguring facial injuries the mean score 28.15 (± 8.12) and this was statistically significant.
- In comparative study between facial nondisfiguring injuries of male patients, the mean score of IES after 6 months was 2.00 (± 0.00) and when compared to patients with disfiguring facial injuries the mean score 19.85 (± 4.46) and this was statistically significant.

**Table 1:** Comparison between nondisfiguring and facial disfiguring injuries

Scale	Time interval	Injury	n	Mean	SD	SD	Mean difference	z-value	p-value
Impact of events	DOD	Facial non-disfiguring	111	32.05	7.87	0.75	-16.341	-11.404	<0.001*
		Facial disfiguring	153	48.39	10.29	0.83			
	1 month	Facial non-disfiguring	111	6.17	2.17	0.21	-28.992	-14.034	<0.001*
		Facial disfiguring	153	35.16	12.08	0.98			
	6 months	Facial non-disfiguring	111	2.07	0.37	0.04	-26.948	-14.300	<0.001*
		Facial disfiguring	153	29.02	13.49	1.09			

**Table 2:** Comparison between nondisfiguring injuries and facial disfiguring injuries (males)

Scale	Time interval	Injury	n	Mean	STD Dev	SE of mean	Mean difference	z-value	p-value
Impact of events	DOD	Facial non-disfiguring	54	24.93	5.02	0.68	-17.333	-10.247	<0.001*
		Facial disfiguring	81	42.26	5.16	0.57			
	1 month	Facial non-disfiguring	54	4.56	1.08	0.15	-23.593	-10.203	<0.001*
		Facial disfiguring	81	28.15	8.12	0.90			
	6 months	Facial non-disfiguring	54	2.00	0.00	0.00	-17.852	-10.339	<0.001*
		Facial disfiguring	81	19.85	4.46	0.50			



Comparison of IES scores between nondisfiguring facial and facial disfiguring injuries (females) (Table 3):

- In comparative study between facial nondisfiguring injuries of female patients, the mean score of IES at the DOD was 38.79 ( $\pm 1.66$ ) and female patients with disfiguring facial injuries the mean score was 55.28 ( $\pm 10.29$ ) and this was statistically significant.
- In comparative study between facial nondisfiguring injuries of female patients, the mean score of IES after 1 month was 7.70 ( $\pm 1.79$ ) and female patients with disfiguring facial injuries the mean score was 43.06 ( $\pm 10.29$ ) and this was statistically significant.
- In comparative study between facial non-disfiguring injuries of female patients the mean score of IES after 6 months was 2.14 ( $\pm 0.52$ ) and female patients with disfiguring facial injuries the mean score was 39.33 ( $\pm 12.79$ ) and this was statistically significant.

Comparison of IES scores among patients with disfiguring facial injuries, nondisfiguring facial injuries and orthopedic/visible scarring (Table 4):

- In patients with orthopedic/visible injuries at the DOD, the mean IES score was  $9.54 \pm 4.32$  compared to patients who had facial nondisfiguring injuries, where the mean IES was 32.05 ( $\pm 7.87$ ) and, in patients with disfiguring facial injuries, the mean IES score was 48.39 ( $\pm 10.29$ ), and this was statistically significant ( $p < 0.001$ ).

- In patients with orthopedic/visible injuries after 1 month the mean IES score was 2.84 ( $\pm 5.76$ ) compared to patients who had facial nondisfiguring injuries where the mean IES was 6.17 ( $\pm 2.17$ ) and, in patients with disfiguring facial injuries, the mean IES score was 35.16 ( $\pm 12.08$ ) and this was statistically significant ( $p < 0.001$ ).
- In patients with orthopedic/visible injuries after 6 months, the mean IES score was 1.68 ( $\pm 3.31$ ) compared to patients who had facial nondisfiguring injuries where the mean IES was 2.07 ( $\pm 0.37$ ) and in patients with disfiguring facial injuries the mean IES score was 29.02 ( $\pm 13.49$ ) and this was statistically significant ( $p < 0.001$ ).

Comparison of IES scores among male and female patients with orthopedic/visible scarring (Table 5):

- In patients with orthopedic/visible injuries at the DOD, the mean IES score of male patients was 9.53 ( $\pm 6.43$ ) compared to female patients who had a mean score of 9.38 ( $\pm 0.79$ ) at the DOD and this was statistically significant while there was no significant difference observed at 1 month and 6 months post-operatively.

Comparison of IES scores among female and male patients with facial injuries disfiguring (Table 6):

- In patients with facial disfiguring injuries the mean score of IES of female patients on DOD was higher

**Table 3:** Comparison between nondisfiguring and facial disfiguring injuries (females)

Scale	Time interval	Injury	n	Mean	SD	SE of mean	Mean difference	z-value	p-value
Impact of events	DOD	Facial non-disfiguring	57	38.79	1.66	0.22	-16.488	-10.000	<0.001*
		Facial disfiguring	72	55.28	10.28	1.21			
	1 month	Facial non-disfiguring	57	7.70	1.79	0.24	-35.354	-10.000	<0.001*
		Facial disfiguring	72	43.06	10.90	1.28			
	6 months	Facial non-disfiguring	57	2.14	0.52	0.07	-37.193	-10.000	<0.001*
		Facial disfiguring	72	39.33	12.79	1.51			

**Table 4:** Comparison between nondisfiguring, facial disfiguring and orthopedic/visible injuries

Scale	Time interval	Injury	N	Mean	SD	Min	Max	p-value
Impact of events	DOD	Nondisfiguring	111	32.05	7.87	13.00	40	<0.001*
		Disfiguring	153	48.39	10.29	36.00	66	
		Orthopedic	114	9.45	4.32	6.00	21	
	1 month	Nondisfiguring	111	6.17	2.17	2.00	11	<0.001*
		Disfiguring	153	35.16	12.08	15.00	55	
		Orthopedic	114	2.84	5.76	0.00	17	
	6 months	Nondisfiguring	111	2.07	0.37	1.00	3	<0.001*
		Disfiguring	153	29.02	13.49	10.00	53	
		Orthopedic	114	1.68	3.31	0.00	9	

(55.28 ± 10.28) compared to male patients (42.26 ± 5.16) and this difference was statistically significant (p < 0.001).

- In patients with facial disfiguring injuries, the mean score of IES of female patients after 1 month of discharge was higher (43.06 ± 10.90) compared to male patients (28.15 ± 8.12) and this difference was statistically significant (p < 0.001).
- In patients with facial disfiguring injuries, the mean score of IES of female patients after 6 months of discharge was higher (39.33 ± 12.79) compared to male patients (19.85 ± 4.46) and this difference was statistically significant (p < 0.001).

Comparison of IES scores in male patients with facial injuries disfiguring (male patients) (Table 7):

- The mean score of IES of male patients with facial injuries at the DOD was higher in less than 50 years (45.94 ± 2.31) age group compared to patients aged more than 50 years (36.00 ± 0.00) and this difference was statistically significant (p < 0.001).
- The mean score of IES of male with facial injuries after 1 month of discharge was higher in less than 50 years (34.12 ± 1.93) age group compared to more than 50 years (18.00 ± 2.49) and this difference was statistically significant (p < 0.001).
- The mean score of IES of male patients after 6 months of discharge was higher in less than 50 years (22.47 ±

1.16) age group compared to more than 50 years (15.40 ± 4.48) and this difference was statistically significant (p < 0.001).

Comparison of IES scores in female patient with facial injuries disfiguring (female patients) (Table 8):

- The mean score of IES of female patients with facial injuries on DOD was higher in less than 50 years (63.50 ± 5.76) age group compared to more than 50 years age group (45.00 ± 2.03) and this difference was statistically significant (p < 0.001).
- The mean score of IES of female patients with facial injuries on discharge after 1 month was higher in less than 50 years (51.10 ± 7.99) age group compared to more than 50 years age group (33.00 ± 2.03) and this difference was statistically significant (p < 0.001).
- The mean score of IES of female patients with facial injuries discharge after 6 months was higher in less than 50 years age group (49.20 ± 7.74) compared to more than 50 years age group (27.00 ± 4.06) and this difference was statistically significant (p < 0.001).

Comparison of IES scores in female and male patients with facial injuries disfiguring (age group less than 50 years of age) (Table 9):

- The mean score of IES on DOD was higher in less than 50 years (63.50 ± 5.76) age group female patients compared to male patients (45.94 ± 2.31) and this difference was statistically significant (p < 0.001).

**Table 5:** Comparison between male and female orthopedic/visible patients

Scale	Time interval	Gender	N	Mean	SD	SE of mean	Mean difference	z-value	p-value
Impact of events	DOD	Male	51	9.53	6.43	0.90	0.148	-5.202	<0.001*
		Female	63	9.38	0.79	0.10			
	1 month	Male	51	4.00	7.28	1.02	2.095	-1.154	0.248
		Female	63	1.90	3.96	0.50			
	6 months	Male	51	1.65	3.00	0.42	-0.067	0.000	1.000
		Female	63	1.71	3.56	0.45			

**Table 6:** Comparison between male and female facial injuries disfiguring

Scale	Time interval	Gender	N	Mean	SD	SE of mean	Mean difference	z-value	p-value
Impact of events	DOD	Male	81	42.26	5.16	0.57	-13.019	-6.925	<0.001*
		Female	72	55.28	10.28	1.21			
	1 month	Male	81	28.15	8.12	0.90	-14.907	-6.905	<0.001*
		Female	72	43.06	10.90	1.28			
	6 months	Male	81	19.85	4.46	0.50	-19.481	-9.766	<0.001*
		Female	72	39.33	12.79	1.51			

**Table 7:** Comparison between less than 50 and more than 50 years age group disfiguring facial injuries (male patients)

Scale	Time interval	Age group	N	Mean	SD	SE of mean	Mean difference	z-value	p-value
Impact of events	DOD	<50 years	51	45.94	2.31	0.32	9.941	-8.321	<0.001*
		>50 years	30	36.00	0.00	0.00			
	1 month	<50 years	51	34.12	1.93	0.27	16.118	-8.138	<0.001*
		>50 years	30	18.00	2.49	0.45			
	6 months	<50 years	51	22.47	1.16	0.16	7.071	-8.138	<0.001*
		>50 years	30	15.40	4.48	0.82			

- The mean score of IES on discharge after 1 month was higher in less than 50 years ( $51.10 \pm 7.99$ ) age group female patients compared to male patients ( $34.12 \pm 1.93$ ) and this difference was statistically significant ( $p < 0.001$ ).
- The mean score of IES on DOD after 6 months was higher in less than 50 years ( $49.20 \pm 7.74$ ) age group compared to male patients ( $22.47 \pm 1.16$ ) and this difference was statistically significant ( $p < 0.001$ ).

Comparison of IES scores in female and male patient with facial injuries disfiguring (age group more than 50 years of age) (Table 10):

- The mean score of IES on DOD was higher in female patients more than 50 years ( $45.00 \pm 2.03$ ) age group compared to male patients aged more than 50 years ( $36.00 \pm 0.00$ ) and this difference was statistically significant ( $p < 0.001$ ).
- The mean score of IES on DOD after 1 month was higher in female patients more than 50 years ( $33.00 \pm 2.03$ ) age group compared to male patients aged more than 50 years ( $36.00 \pm 0.00$ ) and this difference was statistically significant ( $p < 0.001$ ).
- The mean score of IES on DOD after 6 months was higher in female patients more than 50 years ( $27.00 \pm 4.06$ ) age group compared to male patients aged more than 50 years ( $15.40 \pm 4.48$ ) and this difference was statistically significant ( $p < 0.001$ ).

## DISCUSSION

Research in trauma is increasingly being done to identify predictors of the psychological morbidity that follows. Earlier studies have established the presence of PTSD in patients with facial injuries.<sup>4,13,14</sup> There is not much information available on PTSD levels in patients who had sustained facial trauma with disfigurement/scarring post operatively and patients who had facial injuries which had healed without disfigurement/scarring.

The present study has shown statistically significant increased IES scores in patients who had suffered disfiguring facial injuries compared to patients whose facial injuries had healed without disfigurement. This increased scores were seen at all three time intervals (DOD, 1 month and 6 months postoperatively). Significant higher scores of IES was also seen when the data was broken up and compared between the male patients who had sustained disfiguring facial injuries and those who had nondisfiguring facial injuries and also between female patients with facial disfiguring injuries and nondisfiguring facial injuries.

These results indicate the presence of PTSD in patients who had sustained facial disfiguring injuries while those who had nondisfiguring facial injuries had some psychological morbidity but could not be considered to be PTSD and also there were significantly higher PTSD levels in females compared to the male patients.

**Table 8:** Comparison between less than 50 and more than 50 years age group disfiguring facial injuries (female patients)

Scale	Time interval	Age group	N	Mean	SD	SE of mean	Mean difference	z-value	p-value
Impact of events	DOD	<50 yrs	40	63.50	5.76	0.91	18.500	-7.131	<0.001*
		>50 yrs	32	45.00	2.03	0.36			
	1 month	<50 yrs	40	51.10	7.99	1.26	18.100	-7.131	<0.001*
		>50 yrs	32	33.00	2.03	0.36			
	6 months	<50 yrs	40	49.20	7.74	1.22	22.200	-7.516	<0.001*
		>50 yrs	32	27.00	4.06	0.72			

**Table 9:** Comparison between male and female disfiguring facial patients (age group less than 50 years of age)

Scale	Time interval	Gender	N	Mean	SD	SE of mean	Mean difference	z-value	p-value
Impact of events	DOD	Male	51	45.94	2.31	0.32	-17.559	-8.085	<0.001*
		Female	40	63.50	5.76	0.91			
	1 month	Male	51	34.12	1.93	0.27	-16.982	-8.085	<0.001*
		Female	40	51.10	7.99	1.26			
	6 months	Male	51	22.47	1.16	0.16	-26.729	-8.810	<0.001*
		Female	40	49.20	7.74	1.22			

**Table 10:** Comparison between male and female disfiguring facial patients (age group more than 50 years of age)

Scale	Time interval	Gender	N	Mean	SD	SE of mean	Mean difference	z-value	p-value
Impact of events	DOD	Male	30	36.00	0.00	0.00	-9.000	-7.323	<0.001*
		Female	32	45.00	2.03	0.36			
	1 month	Male	30	18.00	2.49	0.45	-15.000	-6.995	<0.001*
		Female	32	33.00	2.03	0.36			
	6 months	Male	30	15.40	4.48	0.82	-11.600	-6.995	<0.001*
		Female	32	27.00	4.06	0.72			

Though PTSD cannot be diagnosed within 1 month of the incident, we strived to try and identify patients with psychological problems within the DOD (usually within a week) and study them prospectively over 1 and 6 months periods.

Earlier studies have mentioned that the female patients were associated with significantly higher anxiety and depression scores following facial injury when compared to men<sup>15</sup> our study tried to compare the PTSD levels among male and female patients who had facial injuries that led to disfigurement.

The mean scores of IES of female patients with facial disfiguring injuries were significantly higher than male patients at all three study intervals (DOD, 1 month and 6 months) these results implied both the groups had PTSD and that female patients had significantly higher PTSD levels compared to male patients; this concurs with other studies where the female patients were associated with higher psychological morbidity after a traumatic incident.

As appearance or 'attractiveness' is associated with the facial region, an important aspect we wanted to study was presence of PTSD in patients with a visible injury not covered by clothing like an injury on the hand/orthopedic injury and facial injuries.

Our study found that there was a highly significant increase in the IES scores of patients who had sustained disfiguring facial injuries compared to visible scarring/orthopedic injuries and this was seen in all the study intervals (DOD, 1 and 6 months). This established that higher PTSD levels were seen in patients with disfiguring facial injuries compared to other body scars/disfigurement.

Another important variable we set to find out was if age of the patients sustaining facial injuries was a factor in increased PTSD levels.

The present study found that both the male and female patients sustaining disfiguring facial injuries and who were less than 50 years of age had higher IES scores compared to patients who were more than 50 years of age. This shows that age is a significant factor in the development of PTSD in patients who had sustained disfiguring facial injuries and also on comparison the female patients who were less than 50 years of age had higher PTSD levels compared to male patients who were less than 50 years of age.

Our study concurs that psychological disturbances present at the time of discharge and which were at a high level persisted at a high level throughout the follow-up period. It also confirms that serious attempts have to be made to try and identify these at-risk patients at an earlier stage to provide psychiatric counseling and treatment so

that comprehensive care of the facial trauma patient can be carried out.

Further, PTSD has been associated with a chronic disturbance in homeostasis<sup>16</sup> which might lead to a prolonged inflammatory period and so healing time of facial injury patients might be protracted.

Taking all this into consideration, it is important that the nursing, para-medical and the surgical staff have an awareness of the psychological morbidity that a facial injury patient might develop, one study has discussed that this knowledge is limited only to the staff of trauma units.<sup>17</sup>

Our study has provided further information on PTSD in facial injuries and provides yet another reason to the clinician that early evaluation and treatment may prevent or lessen the PTSD levels. Further investigations on the psychological morbidity accompanying facial trauma is clearly needed.

## CONCLUSION

The results of our study led to the conclusion that in comparison with patients who had nondisfiguring facial injuries and disfiguring facial injuries, the mean IES scores were significantly higher in the disfiguring facial injury patients, this implied increased PTSD levels and this was observed both in the male and female patients and at all the three study intervals (DOD, 1 and 6 months). The mean IES scores of patients with orthopedic/visible injuries was significantly less and could not be termed strictly as PTSD and when compared to facial disfiguring injury patients the mean IES was significantly higher corresponding to higher levels of PTSD and this may be because the face is perceived for its role in 'attractiveness'/appearance of the individual. We also observed the mean scores of IES was higher in females compared to males in all the study groups, implying higher PTSD levels in females when injuries affect the face and also age contributed to higher means of IES and corresponding higher levels of PTSD with both the male and female facial injury patients who aged less than 50 years having significant higher means of IES than patients above 50 years of age and this was statistically significant in all the three intervals of study (DOD, 1 and 6 months postoperatively).

## CLINICAL SIGNIFICANCE

Early recognition of at-risk individuals who might develop PTSD symptoms that go on to become chronic is essential for the comprehensive management of the facial trauma patient. In our study, we found that injuries to the face leading to disfigurement, gender (female) and age (less than 50 years) had increased PTSD levels.

Clinically, facial injury patients can be given structured self-report questionnaires to help us to identify and predict the presence of psychological morbidity that develops in some individuals and lead to PTSD later on, after an early assessment, the treatment of such morbidities can be undertaken by staff skilled to manage such issues, this leads to faster recovery and improvement in the quality of life of the facial injury patients.

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