

# Assessing psychological consequences following maxillofacial trauma using DASS scale – our experience

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Submitted: 28-08-2015

Revised: 13-10-2015

Published: 10-11-2015

## ABSTRACT

**Aims and Objectives:** The aim of the present study was to investigate the psychological consequences among hospitalized patients facing Maxillofacial trauma. **Materials and Methods:** Ninety-two patients (78 male and 14 female) following maxillofacial trauma were assessed initially and later again after 4-6 months of the injury. For assessment the Depression, Anxiety and Stress Scale (DASS) was used. Prevalence of Depression, Anxiety and Stress was assessed initially and later at follow-up in terms of percentage. Paired t-test was then used to assess if there is any significant difference in the pre and post assessment of Depression, Anxiety and Stress after maxillofacial trauma. **Results:** Of 92 patients, 41.3% had normal depression and 13%, 26%, 16.3% and 3.2% had mild, moderate, severe and extremely severe depression respectively in the initial assessment. Whereas in the follow up assessment, 37.8% were normal, 19.5%, 31.7%, 10.9% had mild, moderate, severe depression respectively and none had extremely severe depression. Similarly, of 92 patients 39.1% of the subjects had normal anxiety, 6.5%, 25%, 15.2% and 14.1% had mild, moderate, severe anxiety and extremely severe anxiety respectively at the initial assessment. Whereas in the follow up assessment 45.1% were normal, 12.1%, 28%, 12.1% and 2.4% had mild, moderate anxiety, severe and extremely severe anxiety respectively. Furthermore, of 92 patients, 79.3% of the subjects had normal stress, 8.7%, 10.8% and 1% had mild, moderate and severe stress respectively and no subjects had extremely severe stress at the initial assessment. During follow up assessment all patients were normal without any kind of stress. Paired t-test revealed that there was significant levels of anxiety in patients following maxillofacial trauma but no significant levels of Depression or Stress was found. **Conclusion:** Psychological morbidity commonly follows maxillofacial injury and it needs to be addressed in routine clinical practice.

**Key words:** Psychological consequences, Maxillofacial trauma, DASS, stress, depression, anxiety

### Access this article online

**Website:**

<http://nepjol.info/index.php/AJMS>

**DOI:** 10.3126/ajms.v7i2.13286

**E-ISSN:** 2091-0576

**P-ISSN:** 2467-9100

## INTRODUCTION

Physical appearance of humans plays an important role in developing and maintaining interpersonal relationships. Humans form first impressions from faces irrespective of being told not to do so. Hence the face is a vital component in making social judgements and perceiving others. Trauma to the face requires physical rehabilitation of the maxillofacial trauma patients. However apart from the physical aspect very little attention has been paid on the emotional and psychological condition of such patients. It is difficult to

interpret the mental status of a normal patient when gets himself into the incident of trauma and finds multiple lacerations in face, missing teeth, bruised or swollen face, and unable to speak because of an end tracheal tube or a tracheotomy. Maxillofacial Surgeons are expert in reduction and fixation of the trauma and take care of occlusion and aesthetic concern of the patient but what about the psychological outcomes of the traumatic facial effects?

Traumatic injuries may lead to maladaptive psychological and behavioural problems that keep on recurring despite

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the fact that the initial stimulus occurred long time back.<sup>1</sup> The face of any individual has special psychological significance as good looking people are usually considered physically attractive and socially competent. Facial Trauma leading to disfigurement affects the social image of the patient.<sup>2</sup> The appearance of the face after the trauma at times affect the patients social image and may lead to social withdrawal and isolation. Inferiority complex is a stigma associated with facial disfigurement.<sup>3</sup>

Trauma has been attributed to be the major cause of death among the individuals in the first 40 years of life, similarly traumatic injuries are responsible for loss of productivity, causing more loss of working capacity among individuals than combined cardiovascular disease and malignancy.<sup>4</sup> Maxillofacial injuries occur in significant proportion of Trauma patients and are associated with severe morbidity, function loss, disfigurement, difficulty to open mouth and eat food among others causing substantial financial loss.<sup>5</sup>

The patients who undergo maxillofacial injuries are likely to have psychological consequences.<sup>6</sup> The lengthy recovery procedure following maxillofacial trauma may develop frustration in the patient.<sup>7</sup> The symptoms of depression and stress following maxillofacial trauma is present at a sub threshold level in many cases and brings into light the diagnostic dilemmas.<sup>8</sup> The potential for both physical and psychological disability lead a researcher to identify maxillofacial trauma as an important subject matter of study and research.<sup>9</sup> Different studies have shown high rate of psychological morbidity, such as Anxiety, Depression and psychiatric disorders like Post Traumatic Stress Disorder following maxillofacial trauma after different kinds of injuries including assault and Road Traffic Accidents.<sup>10,11</sup>

There is a lack of a universally accepted evaluation pattern for screening the psychological consequences of maxillofacial trauma patient. There is also little agreement among the researchers about the questionnaires, screening instruments; symptoms check lists, and behaviour schedules to be used in this area.<sup>12</sup>

Assessment of the Behaviour, Anxiety levels and Depression in the first week following the Trauma is very important for the complete healing of the patients.<sup>13</sup> With this background in mind the primary objective of our study was to measure the outcome of the maxillofacial trauma patient in relation to Depression, Anxiety and Stress. For this purpose the DASS (Depression Anxiety and Stress scale) was used. There is a paucity of studies in assessing the psychological aspects in maxillofacial trauma patients and the present study is the first of its kind to assess the psychological consequences of maxillofacial trauma using the DASS scale in the Indian scenario.

## MATERIALS AND METHODS:

Maxillofacial trauma patients who were admitted in Kasturba Medical College, Mangalore, India and gave their written consent to participate in the study were included.

### Sample size

A prospective, observational cohort study design was used. The study included 92 patients of which 78 were male and 14 females. However 10 subjects (6 male and 4 female) did not turn up for the follow up assessment.

### Inclusion criteria

- Patients over 18 years of age.
- Had traumatic Facial injury (as opposed to the disfigurement as a result of malignancy).

### Exclusion criteria

- People with cerebral impairment.
- A peri-traumatic period of unconsciousness exceeding 15 minutes.
- Injuries from deliberate Self harm.
- People with pre-existing mental disorders or any form of illness related to Depression, Anxiety or Stress were excluded from the study.

### Tools DASS

This tool has been developed by Lovibond and Lovibond.<sup>14</sup> The validated English version of DASS 42 was used in this study. Respondents were asked to rate their experience on each symptom over the past week on a 4-point severity scale ranging from 0 (does not apply to me), to 3 (applies to me most or all of the time). DASS 42 includes 14 items each for measuring the emotional states of depression, anxiety and stress. This screening and outcome measure reflects the past 7 days. A sum of the scores for each of the questions completed by each participant, in each of the sub-scales, were then evaluated as per the severity-rating index. The reliabilities of the DASS scales, as measured by Cronbach's alpha, were .90 for anxiety, .95 for depression, .93 for stress and .97 for the total scale. Correlations of the subscales varied from .75 to .81. The DASS was initially designed to assess the unique components of Depression and Anxiety using separate scales. The third factor, Stress, came up while doing a test combining both depression and anxiety. Accordingly, the stress scale was found to have moderate correlations with the depression ( $r = 0.56$ ) and anxiety scales ( $r = 0.65$ ) consistent with the tripartite model of depression and anxiety.

### Procedure

After approval from the Ethics committee of the Institute and the written informed consent from the participants

assessment was started using the DASS. Assessment was carried out at two time intervals. Initial assessment was carried within 10 days of the injury in the inpatient ward and follow-up assessment between 4 and 6 months after injury at the outpatient department, Department of OMFS, MCOADS, Mangalore. Both the initial assessment and follow-up assessment was performed by a single Maxillofacial Specialist Resident to minimize the error and patients were asked to fill the form alone without the presence of anybody.

**Statistical analysis**

Paired t-test was used to assess if there is any significant difference in the pre and post assessment of Depression, Anxiety and Stress. Data obtained was statistically analyzed using the statistical package SPS version 11.

**RESULTS**

The prevalence of Depression reduced in the normal and severe and very severe category. Anxiety increased in normal, mild and moderate category whereas stress reduced to zero.

**DISCUSSION**

It is a well-known fact that psychological aspects of maxillofacial trauma are poorly documented in routine clinical practice.<sup>15</sup> Research has also shown that the knowledge among the staff in the trauma unit is limited for understanding the psychological reactions to trauma, the risk factors as well as the treatment options for such patients.<sup>16</sup> Hence for the patient to recover completely from the maxillofacial trauma the psychological factors need to be recognized and recorded and then treated.

In the present study the investigators examined the psychological consequences in Maxillofacial Trauma Patients using the DASS scale. The hypothesis was that the level of emotional distress on each sub scale of the DASS would significantly increase following maxillofacial injury. For this purpose a total of 92 subjects were included in the study out of which 10 subjects did not turn up for the follow up assessment. In the present study 85% of the subjects were male and 15% were female. This finding is consistent with previous research where Maxillofacial injuries are predominantly found in males as compared to the females due to higher physical activities men indulge in.<sup>17</sup> A previous study has also revealed that women occasionally participate in trading or farming and are less exposed to assaults, accidents, sports and injury prone works.<sup>18</sup> Hence this may be the reason why maxillofacial injuries are found more commonly in males.

As per the causes for injury for Maxillofacial trauma in the current study 92% of the subjects injury occurred due to Road Traffic Accidents. Road Traffic accident has been found to be the most common cause of maxillofacial Trauma in India.<sup>18</sup> Hence the finding in the present study is consistent with previous research.

Depression when assessed in the subjects initially after the trauma and later at follow up (Table 1) revealed that there was a decrease in the percentage of the level of depression in the normal, severe and extremely severe category. The percentage level of depression was increased in mild and moderate category. Of the 92 patients, 41.3% had normal depression and 13%, 26%, 16.3% and 3.2% had mild, moderate, severe and extremely severe depression respectively in the initial assessment. Whereas in the follow up assessment, 37.8% were normal, 19.5%, 31.7%, 10.9% had mild, moderate, severe depression respectively and none of them had extremely severe depression. However there was no significant difference in the level of depression in the pre and post assessment (Table 2). In a previous research study found that almost one third subjects had elevated anxiety and depression levels at the time of hospital admission due to maxillofacial trauma and there was significant increase in the mean depression level at 1-year follow up.<sup>11</sup> In the present study depression was assessed initially within 10 days of the injury and later at 4 to 6 months after injury and was not found to be significant. This may be due to severe cases of maxillofacial trauma not being present in the current study as well as the supportive culture of the joint Indian families unlike the nuclear families found in the west.

**Table 1: Prevalence of depression, anxiety and stress in pre and post assessment**

Study Parameters	Normal	Mild	Moderate	Severe	Extremely severe
Depression					
Pre	41.304	13.043	26.087	16.304	3.261
Post	37.805	19.512	31.707	10.976	0.000
Anxiety					
Pre	39.130	6.522	25.000	15.217	14.130
Post	45.122	12.195	28.049	12.195	2.439
Stress					
Pre	79.348	8.696	10.870	1.087	1.087
Post	100.000	0.000	0.000	0.000	0.000

**Table 2: Pre and post assessment (paired study)**

Study Parameters	Paired differences		t	P
	Mean	Std. deviation		
Depression pre to post	0.5185	10.18714	0.458	0.648
Anxiety	2.2716	10.37306	1.971	0.05
Stress	0.4815	10.80291	0.401	0.689

In the above table only anxiety was significant at 0.05 level in the pre and post assessment

Anxiety when assessed in the subjects initially after the trauma and later at follow up (Table 1) revealed that there was a decrease in the percentage of the level of anxiety in the severe and extremely severe group. The percentage level of anxiety was increased in the normal, mild and moderate group. Of the 92 patients 39.1 % of the subjects had normal anxiety, 6.5%, 25%, 15.2% and 14.1% had mild, moderate, severe anxiety and extremely severe anxiety respectively at the initial assessment. Whereas in the follow up assessment 45.1% were normal, 12.1%, 28 %, 12.1% and 2.4% had mild, moderate anxiety, severe and extremely severe anxiety respectively. There was a significant difference in the level of anxiety in the pre and post assessment (Table 2). In a previous study done among the patients following brain injury the level of anxiety was significant compared to the level of depression.<sup>19</sup> This finding is consistent with the present study results.

Islam et al<sup>20</sup> conducted a cross-sectional study between UK and Australian facial trauma victims. Their findings revealed that anxiety and depression was present in both the countries for the facial trauma patients. In a previous research study found that almost one third subjects had elevated anxiety and depression levels at the time of hospital admission due to maxillofacial trauma and there was significant increase in the mean depression level at 1-year follow up.<sup>11</sup> However the findings in the current study revealed that anxiety was significant but depression was not significant (Table 2). The reason for this could be that very severe cases of maxillofacial trauma were not present in the current study.

Stress when assessed in the subjects initially after the trauma and later at follow up (Table 1) revealed that there was a increase in the percentage of the level of stress in the normal category at follow up. However the stress levels reduced to zero at follow up for the other categories. Of the 92 patients, 79.3% of the subjects had normal stress, 8.7%, 10.8% and 1% had mild, moderate and severe stress respectively and no subjects had extremely severe stress at the initial assessment. During follow up assessment all patients were normal without any kind of stress. There was no significant difference in the level of stress seen in the pre and post assessment (Table 2). The reason for this may be attributable to the Indian culture where the Joint family system of India provides greater family support as compared to the west where nuclear families prevails.<sup>21</sup> Family support received by the subjects during the treatment may be the reason for no significant levels of stress seen in the present study. So less psychological morbidity in our study can be attributed to the support culture of our society towards the trauma victims.

In previous research studies almost one third of the patients with Facial injury met the criteria for Post Traumatic Stress Disorder (PTSD) on follow-up after 2-3 months.<sup>22,23</sup> In the current study however the patients had significant level of anxiety but no subject at follow-up met the criteria for PTSD. The reason for this could be that very severe cases of maxillofacial trauma were not present in the current study.

The findings of the current study is consistent with previous research indicating that a large number of maxillofacial trauma patients experience high levels of psychological distress.<sup>24</sup> The increased level of distress during the initial assessment confirms the findings of previous research.

So overall, the present study emphasizes that in regular practice we cannot miss the emotion of a patient following the consequences of maxillofacial trauma. However, like every study has limitations our study is not devoid of them. The main limitations of the present study is that the clinical findings were not incorporated as it was a predominantly questionnaire method used in the present study.

The study was presented in 36<sup>th</sup> Congress of Scandinavian Association of Maxillofacial Surgeons, Stockholm on May 2013.

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**Authors Contributions:**

**PKP and HM** - Substantial contribution to conception and design, analysis and interpretation of data; **PKP** - Contributed to data acquisition; **JMB, AA and PKP** - Drafting the article and critical review.

**Source of Support:** Nil, **Conflict of Interest:** None.