DOI Number: 10.5958/0974-1283.2019.00015.X

# Implications of Maxillofacial Injuries on Quality of Life in Trauma Victims

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## ABSTRACT

**Aim:** The objective of this study was to assess the Quality of Life on the patients with maxillofacial injuries.

**Materials and Method:** A cross-sectional prospective study was designed to identify patients admitted with maxillofacial injuries from June 2017 to February 2018. Details regarding the social demographics,nature and severity of injury,and treatment methods were recorded. To assess the Quality of Life,Short Form-36 Version 2.0(SF-36v2)questionnaire was administered with recall period of 4 weeks. Analysis involved descriptive statistics and box plots to correlate the quality of life among various age groups and gender.

**Results:** A total of 129 patients with maxillofacial injuries were identified(115 males, 14 females;mean age = 35.14 years).Road traffic accidents were the cause of injury in 104 patients (80.62%)and slip and fall accounting for 66.7% among the elderly population of above 60 years. Only 36.4% underwent open reduction mode of treatment while the rest were managed conservatively. The overall Quality of life among male and female was not statistically significant,however when correlated with different age groups significant results were seen among the elderly and the middle age group.

***Keywords:*** *Maxillofacial injury,trauma,quality of life,SF-36v2*

## INTRODUCTION

Epidemiological survey adjusts with variation in the geographical region, socioeconomic status, cultural and surrounding factors. These factors can be evaluated for contrast in the statistics and to recognize the differences in the distribution and occurrence of maxillofacial fractures throughout the world. Information acquired can be used as documentary proof for formulating preventive measures taken for such accidents in future.[1] The mechanism of injury and direction of impact influences the anatomic position and fracture patterns. The exposure to the external environment, when compared to the rest of the human body, is more in case of maxillofacial region and hence will require meticulous assessment and treatment.[2] The impact of maxillofacial accidents result in interruption of quite a number integral functions of the head and neck region,such as visual acuity, olfaction, auditory perception,speech,breathing,and eating. These are particularly essential for a regular day to day living of a person.[3]Subsequently,the Quality of Life of the individual is negatively influenced due to incapacitating outcomes of maxillofacial trauma which make them a burden to their families.[4]This can lead to mental anguish in the patients after injury.Mental morbidities are one of the complexities following road traffic accidents and maxillofacial injury.[5]

The psychological problems consist of acute stress disorder, post-traumatic stress disorders (PTSDs),and substantial dejection.[6]These post-traumatic mental problems may additionally occur either quickly or later after injury and dismally,a few sufferers are left without fitting prognosis and treatment. Without suitable

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treatment[7],these psychological troubles can cease up in chronic state and affect the treatment response and normal social potential antagonistically.[8]Studies have proven that sufferers with maxillofacial injuries experience the ill outcomes of severe anxiety issues. In spite of global familiarity with these issues,there is still a lack of data on mental anxiety in cases of maxillofacial injury. Quality of life is influenced by social,economic,psychological,mental state of an individual. To be more precise,it is the assessment of perceived quality of an individual's daily life of their well-being or lack of it.[9]

The Medical Outcomes Study Short Form 36-Item Health Survey(SF-36) is the most widely used generic instrument to estimate quality of life of patients. The benefit of qualitative research is that it allows the researcher to look at individuals' conduct,represent what is necessary to them and understand how people sense and think about a particular situation.[10] After an accident,the victims are typically left in a risky situation where they long for appropriate treatment when they are brought to the hospital.[11]To improve the high-quality of care,appropriate communication between health-care staffs and patients is vital.It is important for the health care providers to apprehend how the patients sense and what they experience for the duration of the length right after the accident to the end of definitive treatment to enhance this communication and as a consequence to develop greater customized care for the individual patient. Medical ethics has constantly stressed that surgical care must include collaboration between surgical care and mental healthcare. Therefore,a trauma victim should be evaluated from both physical and psychosocial perspective. Research on enhancing the maxillofacial trauma care has been continually focused surgically. Surgeons have a tendency to pay little attention to their patient's emotional and psychological aspect. Poor documentation due to low attention of post trauma psychological problems among the doctor has been observed.[12]

In current years,qualitative study has been used to discover patients' experience on trauma care at various levels after an accident. Patient's feeling and understanding towards the nursing care have additionally been explored by the use of qualitative study. The benefit of qualitative study is that it enables the researcher to discover people's behaviour,define what is important to them and perceive how the patients sense and experience about a particular event.[4]The aim of this study was to explore and understand the experience of a maxillofacial trauma patient. The finding of this study would help in further improvement of patient care and communication.

## METHODOLOGY

A Cross-sectional study with all cases of maxillofacial injury visiting the trauma center from June 2017 to February 2018 were included. Patients below the age of 18 years,brought in dead patients and patients not willing to participate were excluded from the study. The study included 129 participants treated for maxillofacial injuries by Department of Oral and Maxillofacial Surgery. Data collection was done in relation to social demographics,etiology of injury and the fracture area of maxillofacial region. Clinical information pertaining to the maxillofacial injury and treatment modality of the patient was obtained from the medical records department of the hospital.

For the study,the mandible was divided into condylar, coronoid, ramus, body, symphysis and dento-alveolar regions. In the middle-third of the face,injuries were recorded as Le Fort,I,II,and III types, zygomatic complex,nasal bones, naso-orbito-ethmoidal complex and dento-alveolar fractures. The frontal sinus and orbital rim were recorded for injuries of the upper face. Etiological factors were classified as road traffic accidents,slip and fall,assault,occupational hazards and sports injuries.

To assess the Quality of Life,the patients were approached when they visited Dept. of Oral and Maxillofacial Surgery for follow-up.SF-36v2 standard Quality of Life questionnaire was administered. With its 36 questions,the SF-36 QoL measure seeks to assess eight life domains of the interviewee: Physical Functioning, Role-Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role-Emotional and Mental Health. The scores range from zero to 100, with higher scores representing better levels of physical and mental well-being. The scores range from zero to 100, with higher scores representing better levels of physical and mental well-being. The data obtained were interpreted using SPSS version 16 on various scales and measures.

## RESULTS

A total of 129 patients who fulfilled the inclusion criteria were included for the study.There were 115 male patients and 14 female patients with a mean age of 35.14 years (range = 18-86 years).Road traffic accidents (RTAs)were the largest cause of maxillofacial injuries(104 cases,80.62%),followed by falls(15 cases, 11.63%),interpersonal assaults and sports injuries(16 cases,12.4%) and industrial accidents (4 cases,3.1%). (Table 1-2)

68(52.71%) of them suffered fractures of the Mid-face,while 20(15.5%) subjects suffered Mandibular fractures.Another 27(20.93%) suffered a combination of Mid-face and Mandibular fractures.The frontal fractures accounted for less than 5% of cases.(Table 2)

The Median of Quality of Life for male and female was comparatively similar at 53.67 (Range = 34.47-73.92) and 53.33 (Range = 43.39-65.02) respectively. (Fig 1) However when compared with individual domains, the male counterparts should slightly better results in Physical functioning and social functioning, whereas females fared better in terms of general health and mental health. (Fig 2)

Individuals in the middle age group showed a positive correlation when compared to the elder population. For the younger age group (18-30 years) Median was 52.98(standard deviation [SD] = 10.2396472; range = 24.5208-76.2708), lower middle age group (31-45 years)Median was 55.541 (standard deviation[SD] = 10.89; range = 24.52-76.2708), upper middle age group (46-60 years) Median was 52.61 (standard deviation [SD] = 8.97; range = 24.52-66.38), elder age group (>60 years) Median was 42.30 (standard deviation [SD] = 5.13; range = 37.41-52.73) (Fig 3)

**Table 1: Socio-demographic characteristics of respondents**

| Characteristics | Frequency (%) |
|---|---|
| **Age (years)** | |
| 18-30 | 60 (46.52%) |
| 31-45 | 42 (32.55%) |
| 46-60 | 21 (16.28%) |
| Above 60 | 6 (4.65%) |
| **Gender** | |
| Male | 115 (89.15%) |
| Female | 14 (10.85%) |
| **Medical expenses** | |
| Self | 59 (45.74%) |
| Family | 8 (6.2%) |
| Employer | 4 (3.1%) |
| Insurance | 58 (44.96%) |
| -Medicare | 9 (6.98%) |
| -Manipal Arogya Suraksha | 28 (21.7%) |
| -Manipal Sampoorna Suraksha | 4 (3.1%) |
| -Mukhyamantri Santwana Harish Scheme | 12 (9.3%) |
| -ESI; Corporate TPA | 7 (5.4%) |
| -Charitable trust (Shankar fund; Dr. Hegde fund) (*In addition to other payment methods) | 5* (3.88%) |

Table 1 shows 60 respondents fall in the age group of 18 to 30 years and only 6 respondents in elderly category, with M: F ratio of 8.9: 1. 44.96% had access to medical insurance whereas 45.74% paid out of pocket.

**Table 2: Injury and treatment characteristics of respondents**

| Characteristics | Frequency (%) |
|---|---|
| **Etiology** | |
| RTA | 104 (80.62%) |
| Slip and Fall | 15 (11.63%) |
| Assault | 5 (3.88%) |
| Occupational injuries | 4 (3.1%) |
| Sports injuries | 1 (0.77%) |
| **Fracture site** | |
| Frontal | 6 (4.66%) |
| Mid-face | 68 (52.71%) |
| Mandible | 20 (15.5%) |
| Frontal + Mid-face | 5 (3.88%) |
| Frontal + Mandible | 1 (0.77%) |
| Mid-face + Mandible | 27 (20.93%) |
| Frontal + Mid-face + Mandible | 2 (1.55%) |
| **Treatment Procedure** | |
| Open reduction/Surgical | 47 (36.4%) |
| Closed reduction/Non-surgical | 82 (63.6%) |

In table 2,RTAs accounted for 80.62% of cause of trauma and Mid-face was the most affected constituting 52.71% of respondents followed by mid-face and mandible at 20.93%.

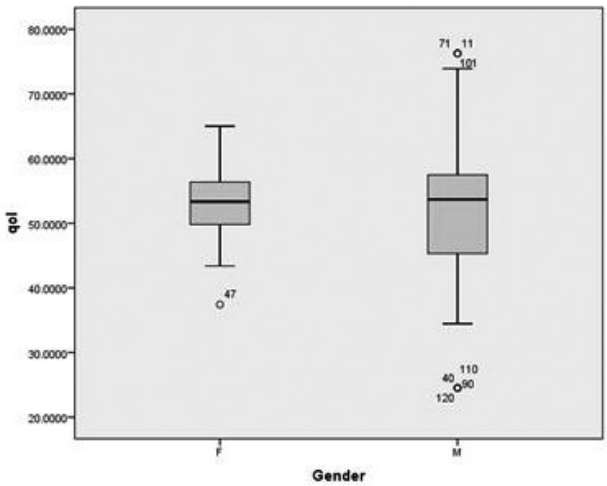


**Fig. 1: Box plot comparing the Quality of life among males and females**

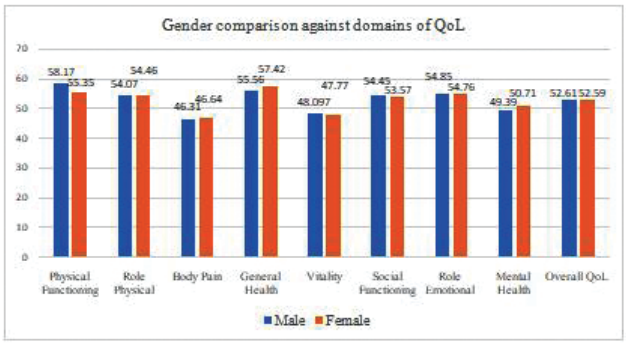


**Fig. 2: Gender comparison against 8 domains of Quality of Life**

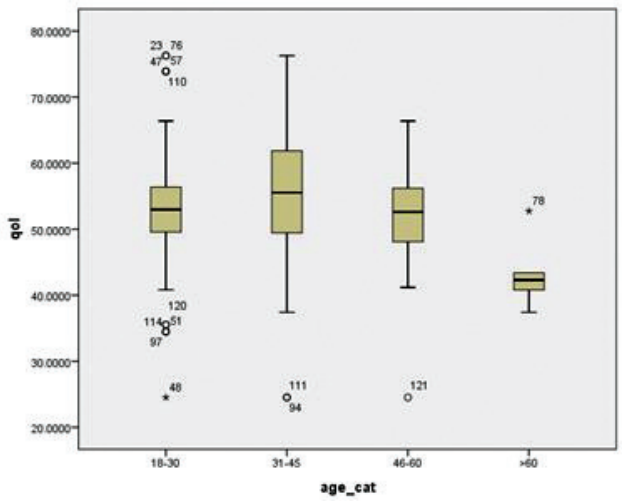


**Fig. 3: Box plot comparing the Quality of life among different age groups**

## DISCUSSION

With a changing population pattern, increasing industrialization and urbanization, there is a rise in episodes of facial injuries, because of which maxillofacial trauma is turning into a burden and leading medical problem in the trauma rooms. Facial trauma is common in assaults and accidents and can be accompanied by distressing psychological sequelae. Numerous factors influence the recovery and rehabilitation from facial trauma, many of which are psychological in nature.

A retrospective study was performed to evaluate the pattern of maxillofacial fractures, associated injuries, and treatment used at AIIMS, New Delhi, between January 2007 and June 2010. The study provided a base for establishing trauma as a major etiology of maxillofacial injuries and planning for preventive strategies. Of the 795 fractures of the maxillofacial skeleton and 86 concomitant injuries from 542 patients, Road traffic accident (RTA) (56.8%) was the most common etiologic factor, followed by falls (22.3%) and fights (18.5%). The age range was from 3 to 75 years (mean-34.7 years) with a peak incidence in the third decade with a male-to-female ratio of 3.7:1. Mandible 615 (77%) was the most common location followed by middle third 180 (23%). Majority of the patients were treated by open reduction and internal fixation (70.6%). Head injury was associated in 16.3% of cases. The researchers also emphasized on the establishment of regionalized, efficient, and focused trauma centres in various parts of the country particularly for acute trauma. Also, the laws regarding the precautions such as use of seat belts, driving as per the prescribed speed limits, and obeying traffic rules must be observed strictly to reduce the incidence of RTA.[13]

A maxillofacial trauma patient not only deals with the physical burden of the injury but also goes through various psychological issues. These range from facial disfigurement to post-traumatic stress disorders accompanied by anxiety and depression. In such cases, the psychological needs of patients with acquired facial trauma are unique. It has been noted that symptoms of depression, anxiety, and hostility were more likely to be reported by patients with maxillofacial trauma when compared to a normal control group for a period of up to 1 year post trauma.[12] The adaption to the normal life post trauma is influenced by medical, social, financial and psychological variables and it is difficult to predict the prognosis and the course of adaption in most of the cases.

Patients with facial trauma also report lower quality of life leading to substance abuse, stigmatization, stress disorders, dejection and lower overall satisfaction with life.[14]Health-related quality of life (HR QoL) of patients with facial trauma was recorded and it was compared with that of healthy controls. A total of 126 patients with facial injuries and 126 healthy controls were recruited for the study for the study. The individuals were measured on WHO Quality of Life Questionnaire and depression was measured with the Hospital Anxiety and Depression Scale (HADS). Scores in all domains of the WHO QoL-Bref (physical, psychological, social relations, and environment) were considerably reduced in injured patients compared with controls. During follow up the researchers found improvements only in the domains of physical health and environment, but not in psychological health. There was a significant reduction in the HR QoL domain of social relationships with time. The regression equation for all four QoL domains as predictors was significantly related to depression scores throughout the study period. Patients with facial injuries are at risk of poor QoL after trauma. There was a high incidence of depression throughout the follow-up period, and poor QoL at baseline predicted depression during follow-up.[15]

Another study conducted at Kerman University of Medical Sciences, Iran reported depression and anxiety disorders in patients with maxillofacial trauma. In the study, a cohort of 50 subjects were selected from the patients with maxillofacial traumas and a control group of 50 subjects with no maxillofacial trauma were recruited. Hospital Anxiety and Depression Scale (HADS) and Oral Health Impact (OHIP-14) questionnaires were used.14% of the subjects were rated as depressed under HADS depression scale, with another 10% borderline cases. However, from the control group only 4% were depressed and 2% of borderline case. The results showed that patients with maxillofacial traumas had higher rates of depression and anxiety, with significant differences between the cohort group and the control group (P=0.01). The results showed a significant relation between depression severity and confounding factors. The mean of OHIP-14 parameters were 35.51 ±5.2 and 22.3±2.4 in cohort and control groups, respectively, with statistically significant differences (P=0.01).[16]

Patients with all forms of acquired facial disfigurement have many concerns in common, which include challenges in social functioning, body image adaptation and the possibility for psychological dysfunction.

One study compared plastic surgery patients undergoing treatment for facial cancer with patients undergoing reconstruction for scarring resulting from traumatic injury. Facial cancer patients reported lower levels of depression, anxiety, social concern and concern about their appearance as compared to the facial trauma patients.[17]

## CONCLUSION

The results of the study show it is very important to provide psychiatric support for all the patients with maxillofacial traumas. Doctors can enhance patients' rehabilitation by keeping themselves updated with the clinical literature on the psychosocial adaptation of patients with acquired facial trauma. It is also vital to follow-up with patients on how they are coping with the social, emotional and psychological changes post trauma care. One should counsel the patients to undergo cognitive-behaviour therapy to address such difficulties, using both formal and self-help methods.

The healthcare provider must ensure that their patients attain the highest level of psychosocial rehabilitation by developing a consistent and trusting relationship with a mental health professional. Clinicians should emphasize this important consideration and also explain it to the patients' relatives who play a major role in rehabilitation of the patient.

**Ethical Clearance:** Taken from the Institutional ethics committee

**Source of Funding:** Self funded

**Conflict of Interest:** Nil

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