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Overview *Facial Injury Severity Scale* (FISS) Scores in Maxillofacial Trauma Patients at the ER Hasan Sadikin Hospital Bandung Period January – December 2021

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Abstract

Background: Maxillofacial trauma is a physical trauma that can affect the hard and soft tissues of the face. Facial injury severity scale (FISS) is a scoring system that is easy and simple to perform in assessing the severity of maxillofacial trauma.

Objective: To describe the maxillofacial trauma score in the ER Hasan Sadikin Hospital Bandung using Facial Injury Severity Scale (FISS) for the period January – December 2021.

Methods: A descriptive retrospective study conducted at Hasan Sadikin Hospital Bandung in January-December 2021. The research subjects were medical records of patients who experienced maxillofacial trauma in January 2021 – December 2021 and can be assessed using the Facial Injury Severity Scale (FISS).

Results: The study shared from 95 patients (67.86%) were male and 45 (32.14%) were female (32.14%). The mean age of the patients was 28.817 ± 11.63 years with an age range of 2–79 years. The most common causes were traffic accidents [58 (41.43%)], followed by interpersonal violence [39 (27.86%)], falls [20 (14.29%)], other causes [13 (9.28%))], sports accidents [6 (4.28%)], and work accidents [4 (2.86%)]. The FISS scores in this study ranged from 1–10 with a mean of 4.63 ± 2.46.

Conclusion: Facial Injury Severity Scale (FISS) scores in this study ranged from 1–10 with a mean of 4.63 ± 2.46. The distribution of severity based on sex stratification generally showed the same results.

Keywords: Maxillofacial trauma, Facial Injury Severity Scale (FISS) score

Introduction

Maxillofacial trauma is a physical trauma that can affect the hard and soft tissues of the face. The causes of maxillofacial trauma are varied, including traffic accidents, physical abuse, falls, sports and gun trauma. Traffic accidents are the cause with the highest percentage of disability and death in adults generally under the age of 50 years and with the greatest prevalence usually affecting the age limit of 21-30 years.[1] Based on the report of Adam Malik Hospital Medan, 72% of deaths in maxillofacial trauma patients were mostly caused by traffic accidents. Patients with fatal traffic accidents have to be hospitalized and can be permanently disabled.[2]

Maxillofacial trauma is highly dependent on the mechanism of injury, the maxillofacial anatomical deformity involved and the function of organ systems related to maxillofacial

structures.[3] An initial assessment of the severity of maxillofacial trauma is needed to determine and estimate a treatment plan in this way, then a method is called the maxillofacial trauma severity assessment system.[1,4]

A scoring system has emerged since the 1970s that aims to find prognostic value for trauma patients in order to become a measuring tool in research. Initially, most scoring systems only evaluated general trauma, such as the Injury Severity Score (ISS), Traumatic and Injury Severity Score (TRISS), dan New Injury Severity Score (NISS).[3] Facial trauma requires a different scoring system because of the many functional impairments it can cause. Several journals have reported the existence of a scoring system for maxillofacial trauma such as the Facial Injury Severity Scale (FISS) and Mandible Injury Severity Score (MISS). Facial injury severity scale (FISS) is a scoring system that is easy and simple to perform in assessing the severity of maxillofacial trauma, this method describes maxillofacial injuries related to facial anatomic involvement.[4,5] This study aims to describe the maxillofacial trauma score in the Emergency Installation of Hasan Sadikin Hospital Bandung using the Facial Injury Severity Scale (FISS) for the period January – December 2021.

Methods

This research is a descriptive retrospective study conducted at Hasan Sadikin Hospital Bandung. This study was conducted in January-December 2021. The study population was all oral surgery patients who were treated at Hasan Sadikin Hospital in Bandung. The research subjects were medical records of patients who experienced maxillofacial trauma at the Emergency Installation of Hasan Sadikin Hospital, Bandung in January 2021 – December 2021, which met the inclusion criteria and were not included in the exclusion criteria. The inclusion criteria for this study were the medical records of patients at Hasan Sadikin Hospital in Bandung who experienced maxillofacial trauma in January 2021 – December 2021 and could be assessed using the Facial Injury Severity Scale (FISS). The exclusion criteria for this study were the medical records of maxillofacial trauma patients that were not equipped with a plain head/panoramic /waters/CT scan of the head.

Then, demographic data such as age, gender, and education, as well as data in the form of plain head/panoramic/waters/CT scan results and FISS scores. This research was conducted after being approved by the Health Research Ethics Committee of the Dr. Hasan Sadikin Hospital Bandung. Data analysis was performed using the Microsoft Excel program.

Results

Based on the medical record data of Dr. Hasan Sadikin Hospital, during 2021, there were 140 patients with maxillofacial trauma (Table 1). Of the 140 patients, 95 people (67.86%) were male and 45 (32.14%) were female (32.14%). The mean age of the patients was 28.817 ± 11.63 years with an age range of 2–79 years. Maxillofacial trauma in this study was mostly caused by traffic accidents [58 (41.43%)], followed by interpersonal violence [39 (27.86%)], falls [20 (14.29%)], other causes [13 (9.28%)], sports accidents [6 (4.28%)], and work accidents [4 (2.86%)]. The FISS scores found in this study ranged from 1–10 with a mean of 4.63 ± 2.46.

Table 1: Characteristics Patients

Characteristics	**N = 140**
Gender	
• **Male**	95 (67,86%)
• **Female**	45 (32,14%)
Age (min-max) (years)	2–79
Age (mean ± SD) (years)	28,817 ± 11,63
Etiology	
• **Traffic Accident**	58 (41,43%)
• **Interpersonal violence**	39 (27,86%)
• **Fall**	20 (14,29%)
• **Sports accident**	6 (4,28%)
• **Work accident**	4 (2,86%)
• **Others**	13 (9,28%)
FISS Score (range)	1–10
FISS Score (Mean ± SD)	4,63 ± 2,46

Based on Table 2, the distribution of the Facial Injury Severity Scale (FISS) scores was mostly moderate (FISS score 4-7) as many as 67/140 (47.86%) patients. Meanwhile, the second highest was included in the mild degree, namely 45/140 (32.14%) patients and the last was included in the severe degree, namely 28/140 (20.00%) patients.

Table 2: Distribution of Severity

Severity	**Frequency**	**Percentage**
Mild (FISS Score 1-3)	45	32,14%
Moderate (FISS Score 4-7)	67	47,86%
Severe (FISS Score 8-15)	28	20,00%
Total	140	100

The degrees of severity based on gender stratification can be seen in Table 3. In general, both mild, moderate, and severe degrees were dominated by men who were the majority group in the study. The majority of men and women in this study had moderate degrees of trauma, namely 46 and 21 people, respectively. These results are consistent with the general proportion of severity (Table 2) which shows that most of the patients had moderate trauma. The second and last positions also show results that are comparable to the results obtained in Table 2.

Table 3: Severity by Gender

Gender	**FISS Score**			**Total**
	Mild	**Moderate**	**Severe**	
Male	29	46	20	95
Female	16	21	8	45
Total	45	67	28	140

Discussion

The results of this study through the measurement of the Facial Injury Severity Scale (FISS) score aimed to describe the severity of maxillofacial trauma in patients with maxillofacial trauma so that considerations can be made in planning treatment and patient prognosis. In previous studies, there was no relationship between FISS and head and cervical injuries. However, the FISS can still be used as a meaningful assessment of the severity of maxillofacial trauma and determine prompt and appropriate management. The FISS can also be used as a communication tool with other health professionals to accurately determine the severity and management of patients with maxillofacial trauma.[6]

The results of the study by Aita et al, in 2018 showed that all patients with FISS>5 require surgical intervention in the operating room and are useful for communication between surgeons and hospital staff. These results can also be helpful in deciding which trauma center to refer, as well as predicting the cost of care, as this group of patients is 18 times more likely to undergo intervention under general anaesthesia.[7] Based on the study Bagheri et al, when publishing this score in 2006, have shown an association between higher treatment costs and higher FISS, but did not show an association between FISS and the need for specialized surgical intervention, as there appears to be a score limit for this.[8] Bagheri et al showed that the higher the FISS score, the more likely the patient was to be hospitalized; however, the correlation is weak. Meanwhile, Aita et al found a statistically significant difference for the correlation of FISS with time of hospitalization, where patients with FISS scores > 5 were 18 times more likely to be hospitalized for more than 3 days, regardless of the need for care from other specialties.[7,8]

The results of this study are more or less the same as those conducted by Kesuma and Bangun which stated that the average FISS was 3.37 ± 1.9 with a minimum value of 1 and a maximum of 9. However, in this study, the majority of patients had FISS scores 2 (24.7%) were included in the mild grade, while in this study the majority of patients had a score of 4 – 7 or included in the moderate grade. The difference in these results can be explained that in the Kesuma and Bangun study, the majority of traumas had a minimal score and the difference in the range of FISS scores was not too far due to the low acceleration of trauma in Jakarta caused by higher congestion levels in Jakarta than in Bandung.[9]

This study has several limitations, namely, it is a retrospective study. Retrospective studies have significant biases that may influence the selection of study subjects. Researchers also cannot control exposure or outcome assessment, and rely on accurate record keeping. This study is a single-center study. Many of the data in this study were forced to be excluded due to incomplete medical record records.

Conclusion

The Facial Injury Severity Scale (FISS) scores found in this study ranged from 1–10 with a mean of 4.63 ± 2.46. The most common FISS scores found in this study were moderate (FISS scores 4-7), which were 67/140 (47.86%) patients. Meanwhile, the second highest was the mild degree, namely 45/140 (32.14%) patients and the last was included in the severe degree, namely 28/140 (20.00%) patients. The distribution of severity based on sex stratification generally showed the same results.

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