

Characteristics of Orthopedic Patients in Emergency Room of Kasih Ibu Saba Hospital January 2020 - December 2020

I Nyoman Gede Susila

Department of Orthopedics and Traumatology, Kasih Ibu Saba Hospital, Bali, Indonesia

Abstract: Orthopedic injuries can include cuts, bruises, strains or sprains, as well as injuries to the bones that cause fractures and dislocations. In 2018 in Bali, fractures occupied the lowest case prevalence. The most cases in that year included bruises, abrasions, sprains and strains. This study aims to determine the characteristics of orthopedic injury patient visits in the emergency department of RumahKasih Ibu Saba during 2020, in order to provide the best possibility for patients to determine the treatment needed with a fast response time, and in actions that require surgery, to prevent an increase in such cases, considering that Bali is a tourism area. This research method is a descriptive study with a cross-sectional retrospective approach. The sampling technique used is total sampling, there are 101 respondents. Analysis of the results using statistical analysis of the frequency distribution. The results of this study were 52 female (51.5%) and 49 male (48.5%), most of the respondents are aged 25-64 (68.3%), for the type of injury, most of them are closed fracture 66 (65.3%), and response time ≥ 60 minutes 54.5%. By knowing the characteristics of orthopedic injuries and the response time at the Kasih Ibu Saba Hospital, Bali, in order to improve facilities, infrastructure, human resources and management of the Hospital Emergency Room (ER) in ensuring emergency response with fast response time and appropriate handling.

Keywords: orthopedic injury, fracture, dislocation, sprain, strain

1. Introduction

Injuries can occur physically or psychologically. Musculoskeletal tissue injury can be in the form of wound, bleeding, bruising (contusion), partial strain or tear (sprain), avulsion or rupture, blood vessel and nerve disorders, and injury to the bone causing fractures and dislocations.¹ Fractures can occur at the ends of the bones and joints (intra-articular) which at the same time results in joint dislocation. This fracture is also called a dislocation fracture.² These injuries can be caused by a variety of mechanisms reflecting the different ways and forces can be applied to bones and joints, including levers, twisting, direct impact, or pieces of bone being pulled away at the attachment site of tendons or ligaments.³

According to WHO data in 2011, there are more than 5 million people die each year due to accidental incidents, both intentional and unintentional, and about 1.3 million people experience physical disabilities.⁴ Traffic accidents were the most common cause of traumatic orthopedic injuries with an overall prevalence of 63.6%.⁵ Several researchers also reported the incidence of traffic accidents as the main factor for fracture, namely 29.4%,⁷ 49.3%,⁸ and 68.4%.⁹ The second most common determinant was falls with a prevalence of 21.8% and 35.1%, respectively.^{6, 10}

In Indonesia, the incidence of fractures occurs at 1.3 million annually with a population of 238 million, which is the largest in Southeast Asia. The incidence of fractures in Indonesia reported by the Indonesian Ministry of Health (2007) shows that about eight million people experience different fractures.¹¹ The proportion of types of injuries in Bali itself in 2018 was dominated by bruises or abrasions (56.40%), sprains or strains (29.80%), and torn wounds (20.63%). The prevalence of fracture itself is 7.46%.¹²

Considering that Bali is a tourism area¹³, knowing the characteristics of orthopedic injury patient visits in the emergency department during 2020, can provide the best possibility for patients to determine the treatment needed, prepare and provide adequate facilities in proper handling with fast response time and in actions that require surgery, in order to prevent an increase in such cases.

2. Methods

The research method is descriptive with a retrospective cross sectional approach. This is a hospital based research which is taken from secondary data sources in the form of medical records of Kasih Ibu Saba Hospital, Bali. The use of total sampling technique using all orthopedic patients who have complete medical records and who were treated at Kasih Ibu Saba Hospital during 2020, and obtained 101 samples.

Inclusion criteria were orthopedic trauma patients who were treated at Kasih Ibu Saba Hospital, Bali in the January-December 2020 period with complete medical record data: age, gender, diagnosis (fracture, dislocation, contusion, sprain or strain, and wound), and response orthopedic specialist in handling the case. The exclusion criteria included incomplete medical record data and other orthopedic diagnoses. Furthermore, data analysis was carried out.

3. Result

During the study period, 101 samples were obtained with the youngest age 4 years and the oldest 84 years. From the total sample, there were 52 (51.5%) women and 49 (48.5%) men. In addition to being divided by gender, the sample was also classified based on certain age groups, which is, the children group 9 (8.9%), the young age group (15-24 years) 12

(11.9%), the adult group (25-64 years) 69 (68.3%) and the elderly group (>65 years) 11 (10.9%).

	Characteristic	N=101
Age	Child's Age (< 15 years), n (%)	9 (8, 9%)
	Young Age (15-24 years), n (%)	12 (11, 9%)
	Adult Age (25-64 years), n (%)	69 (68, 3%)
	Old Age (>65 years), n (%)	11 (10, 9%)
Gender	Female, n (%)	52 (51, 5%)
	Male, n (%)	49 (48, 5%)
Diagnose	Closed fracture, n (%)	66 (65, 3%)
	Open fracture, n (%)	16 (15, 8%)
	Dislocation, n (%)	5 (5, 0%)
	Contusion, n (%)	9 (8, 9%)
	Sprain or strain, n (%)	4 (4, 0%)
	Other (wound), n (%)	1 (1, 0%)
Response time	≤60 minutes, n (%)	45 (45, 5%)
	≥60 minutes, n (%)	55 (54, 5%)

Data regarding the type of trauma were obtained from the patient's medical record, where the most closed fractures were 66 (65.3%), followed by open fracture 16 (15.8%), dislocation 5 (5.0%), contusions 9 (8, 9%), 4 (4.0%) sprains or strains, and the least wound 1 (1.0%). The response time of orthopedic specialists in handling orthopedic injury cases was 60 minutes in 45 (45.5%) cases and 60 minutes in 55 (54.5%) cases.

4. Discussion

In this study, there were 101 samples of patients with orthopedic injuries. Most of the samples were women (N=52, 51, 5%) and the rest were men (N=49, 48, 5%). However, this result is inversely proportional to the study in India by SaikiranVelpula et al where out of 1020 cases, 61.1% of the patients were male. Similar to the research conducted by Mir Sadat-Ali in Saudi Arabia, it was found that trauma was more common in men.¹⁴ This is due to the factors that influence the occurrence of high-speed and low-speed injuries such as traffic accidents, motor vehicle accidents or falls.^{3,15} Another factor is that women have lower bone mass density (BMD) than men, so the risk of injury is greater.^{16, 17}

Based on the data obtained, the productive age group (25-64 years) had the greatest incidence of injury. This is because the productive age has a high level of activity when compared to other age groups so that it can increase the risk of accidents causing fractures, dislocations, sprains or strains, contusions and wound.¹⁸ The same results were found in a study conducted by SaikiranVelpula, the highest prevalence of injury occurred in the productive age population between the ages of 21-60 years.⁵

Viewed based on the type of injury, closed fracture was the most common type of injury, namely 66 (65.3%), followed by open fracture 16 (15.8%) and the least was wound 1 (1.0%). These results are in line with the study of Mohammad H. Nabian et al, where fracture was the most frequent injury (43.4%), followed by soft tissue injury (21.1%), laceration (12.8%), ligament/tendinous injury (11%), and dislocation (3.3%).¹⁹ In contrast to the most common types of injuries in Bali in 2018, bruises or abrasions and fractures were the last order. An increase in

the incidence of fractures occurred in 2020 due to the high energy trauma caused by traffic and motor vehicle accidents.

Treatment of orthopedic injury cases requires rapid immobilization so as not to compromise the patient's functional status, so that a fast response time is needed as well. Response time is the time it takes the patient to get help in accordance with the emergency of his illness since entering the emergency room door. Of the 101 samples obtained, the response time performed by an orthopedic specialist when a patient is in the ER takes 60 minutes around 54.5% and 60 minutes around 45.5%. Response time can be influenced by external and internal factors, which affect delays in handling emergency cases, including patient character, staff placement, availability of stretchers (tools used to transfer patients from / to ambulance) and health workers, patient arrival time, implementation of management and selected screening and treatment strategy. This can be a consideration in determining the concept of response time for handling cases in the hospital's Emergency Room (ER). The response time strategy is the speed and accuracy of service in a hospital that can provide confidence to customers to always use health services at the hospital.²⁰

5. Conclusion

The large number of orthopedic trauma cases is a concern, especially the incidence of fractures which has increased from 2018-2020 in Bali, followed by other injuries, such as dislocations, contusions, sprains or strains and wounds. Considering that Bali is a tourism area, the facilities, infrastructure, human resources and management of the hospital's Emergency Room (ER) must be improved in order to guarantee an emergency response with a fast response time and appropriate treatment.

References

- [1] Helmi ZN. Buku Ajar Gangguan Muskuloskeletal. Jakarta: Salemba Medika.2011, 411-55.
- [2] Bucholz RW, Heckman JD, Court-Brown CM. Rockwood & Green's Fractures in Adults, 6th Edition. USA: Maryland Composition.2006, 80-331.
- [3] Section IV: Trauma, Chapter 13: Musculoskeletal Injury. Jones and Bartlett Learning, LLC.2013, 78-80.
- [4] 2011. "World Health Statistics 2011, Page 19". WHO. France
- [5] Velpula S, Gummadi LP, Vallepu N, Dasari BK, Anchuri SS. Epidemiology of orthopedic trauma admissions in a multispecialty hospital in Warangal-A retrospective Study. Clin. Pract.2019, 16 (6): 1423-1428.
- [6] Huda N, Gupta P, Pant A, Iqbal A, Julfiqar M, et al. Pattern of orthopedic injuries among patients attending the emergency department in a tertiary care hospital. An analytical study. ActaMedica International.2014, 1 (10).
- [7] Pan R, Chang N, Chu D, Hsu K, Hsu Y, et al. Epidemiology of orthopedic fractures and other injuries among inpatients admitted due to traffic accidents: a 10-year nationwide survey in Taiwan. Sci World J.2014, 637872.

- [8] Thomas V, Lavanya, Sridhler. Epidemiologic profile of road traffic accident (RTA) cases admitted in a tertiary care hospital-a retrospective study in Hyderabad, Andhra Pradesh. *IJMPS*.2013, 3: 30-36.
- [9] Manna N, Mallik S, Mandal P, Chakraborty D, Sardar JC, et al. Epidemiological factors of road traffic accidents: a study in a tertiary care setting in India. *JPMS*.2013, 3: 48-53.
- [10] Ahmed E, Chaka T. Orthopedic and major limb trauma at TikurAnbessa University Hospital, Addis AbabaEthiopia. *East Cent. Afr J Surg*.2005, 10: 43-50.
- [11] 2007. "ProfilKesehatan Indonesia". DepKes RI. Jakarta.
- [12] 2018. "LaporanProvinsi Bali Riskesdas 2018". Kemenkes RI.
- [13] Purnamawati O, Putra ND, Wiranatha AS. Medical Tourism in Bali: A Critical Assessment on the Potential and Strategy for its Development. *Journal of Travel, Tourism and Recreation*.2019, 6 (12): 39-43.
- [14] Sadat-Ali M, Alomran AS, Azam Q, Al-Sayed HN, Al-Dhafer BA, Kubbara AF, et al. Epidemiology of Fractures and Dislocations among Urban Communities of Eastern Saudi Arabia. *Saudi Journal of Medicine & Medical Sciences*.2015, 3 (1): 54-57.
- [15] Islam MR, Kelarestaghi KB, Ermagun A, Banerjee S. Gender Differences in Injury Severity Risk of Single-Vehicle Crashes in Virginia: A Nested Logit Analysis of Heterogeneity.2019.
- [16] Edwards MH, Jameson K, Denison H, Harvey NC, Aihie SA, Dennison EM, et al. Clinical risk factors, bone density and fall history in the prediction of incident fracture among men and women. *Bone*.2013, 52 (2): 541-547.
- [17] Crandall CJ, Larson J, Wright NC. Serial Bone Density Measurement and Incident Fracture Risk Discrimination in Postmenopausal Women. *JAMA Intern Med*.2020, 180 (9): 1232-1240.
- [18] Riyadina W, Suhardi PM. Pola dan DeterminanSosiodemografiCederaAkibatKecelakaan Lalu Lintas di Indonesia. *MajelisKedokteran Indonesia*.2009, 59 (10).
- [19] Nabian MH, Zadegan SA, Zanjani LO, Mehrpour SR. Epidemiology of Joint Dislocations and Ligamentous/Tendinous Injuries among 2, 700 Patients: Five-year Trend of a Tertiary Center in Iran. *Arch Bone Jt Surg*.2017.5 (6): 426-434.
- [20] Yoon P, Steiner I, & Reinhardt G. Analysis of factors influencing length of stay in the emergency department. *CJEM*.2003, 5 (3): 155-61.