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Characteristics of Fracture Patients at the Dr. Mintohardjo Navy Hospital in 2022

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ABSTRACT

Fractures are discontinuities in bone, joint cartilage, and epiphyseal cartilage that result from direct or indirect trauma. Fractures occur frequently around the globe and in Indonesia, and their incidence is growing annually. According to the World Health Organization (WHO), approximately 13 million people will suffer fractures in 2020. This study aims to determine the demographics of fracture patients and the causes of fractures at Dr. Mintohardjo Navy Hospital in 2022. We conducted a retrospective study of medical records of fracture patients in the Dr. Mintohardjo Navy Hospital, Jakarta, Indonesia in 2022 and this study included 279 participants. According to demographic information, the majority of fracture patients in this study were male, between the ages of 26 and 35, had a bachelor's degree, and were employed as military. In addition, traffic accidents are the leading cause of fractures in patients, with the majority occurring in the clavicle region. In 2022, the majority of fracture patients at Dr. Mintohardjo Navy Hospital were of productive age and male, with the most common cause of fracture being traffic accidents and occurring in the clavicle region.

Keywords:

Characteristics, Fracture, Patient

1. INTRODUCTION

A fracture is a break in the continuity of bone, joint cartilage, and epiphyseal cartilage, whether total or partial [1]. Fractures can generally be induced by direct or indirect trauma. The majority of fractures are caused by motor vehicle accidents, sports injuries, falls, workplace incidents, and pathological fractures [2].

Fracture is a health concern that is often found throughout the globe, including in Indonesia. According to the World Health Organization (WHO) [3], the incidence of fractures is increasing each year, with a prevalence rate of 2.7% among approximately 13 million people in 2020 [4]. According to the 2019 Global Burden of Diseases, Injuries, and Risk Factors Study (GBD), there were 178 million cases of fracture worldwide in 2019 [5]. Patella fractures, tibia fibula fractures, and ankle fractures were the most prevalent fractures in 2019 [6], with an incidence rate of 419 cases per 100,000 population and a prevalence rate of 15,381 cases per 100,000 population among those over 95 years of age [7].

Indonesia is the Southeast Asian country with the highest incidence of fractures, a total of 1,3 million per year. Lower extremities (67%), upper extremities (32%), head (11.9%), back (6.5%), chest (2.6%), and abdomen (2.2%) accounted for the most fractures in 2018, according to the Riskesdas [8]. The provinces with the highest incidence of fractures in Indonesia were Bangka Belitung (9.1%), North Kalimantan (8.1%), and Aceh (7.7%) [9]. According to the findings of Bergh et al. [10], who conducted a 4-year study in Sweden from 2015-2018, the majority of fractures occurred between the ages of 16-105 years and 64.5% occurred in females, with distal radius fractures, femur fractures, ankle fractures, humerus fractures, and metacarpal fractures occurring more frequently than 50% of the time [11]. In addition, epidemiological studies conducted over the past 15 years have reported an incidence of 30.7 per 100,000 individuals per year for open fractures in adults [12]. At 34.1%, motorcycle accidents are the leading cause of open fractures of the lower extremities [13].

The authors are interested in conducting research on the description of the characteristics of fracture patients at the Dr. Mintohardjo Navy Hospital in 2022, based on the general description of fracture patients that occurs in various

countries [14]. This study aims to determine the characteristics of fracture patients, the number of fracture cases, the distribution of fracture types, the distribution of fracture patients based on sociodemographic factors such as age, gender, education, and occupation, and the distribution of fracture patients based on the cause of fracture at Dr. Mintohardjo Navy Hospital in 2022 [15].

2. METHODS

We conducted a retrospective study of medical records of fracture patients in the Dr. Mintohardjo Navy Hospital, Jakarta, Indonesia in 2022 and this study included 279 participants [16]. Descriptive analysis was done on the characteristics of the subjects [17]. Categorical variables were presented in frequency and percentage, n (%) [18]. Data was managed and analyzed using Microsoft Excel version 23.08 [19].

3. RESULTS AND DISCUSSION

Table 1. Demographic Data of Fracture Patients

Variable	n (%)
Age (years)	
5-11	7 (3)
12-16	12 (4)
17-25	62 (22)
26-35	72 (26)
36-45	39 (14)
46-55	34 (12)
56-65	23 (8)
>65	30 (11)
Gender	
Male	172 (62)
Female	107 (38)
Education	
Elementary school	9 (3)
Middle school	31 (11)
High school	96 (34)
Bachelor degree	121 (43)
Master degree	22 (8)
Occupation	
Students	52 (19)
Government employee	40 (14)
Private employee	15 (5)
Self employee	13 (5)
Military	103 (37)
Housewife	10 (4)
Retired	46 (16)
Type of comorbidities	
No comorbid	153 (55)
Hypertension	78 (28)
Diabetes Mellitus	34 (12)
Asthma	3 (1)
Cardiovascular disease	2 (1)
Obesity	9 (3)
Cause of fracture	
Traffic accident	168 (60)
Occupational accident	23 (8)
Household accident	72 (26)
Sport injury	16 (6)

As shown in Table 1, the majority of fracture patients were male (62%) and between the ages of 26 and 35 (26%). The majority of patients in this study held a bachelor's degree (43%), and they were employed as military (37%). In addition, 60% of fractures in patients are caused by traffic accidents [20].

Tabel 2. Distribution Of Fractures Based On Anatomical Site

Fracture Location	n (%)
Upper extremity	
Clavicle	45 (16)
Humerus	22 (8)
Radius Distal	30 (11)
Antebrachii	18 (6)
Olecranon	10 (4)
Manus	28 (10)
Fracture Location	**n (%)**
Vertebra	
Vertebra	12 (4)
Lower extremity	
Pelvis	3 (1)
Femur	27 (10)
Collum femur	14 (5)
Cruris	24 (9)
Patela	5 (2)
Ankle	18 (6)
Pedis	23 (8)

Based on the location of the fracture, 16% of clavicle fractures occur in the upper extremities, and 10% of femur fractures occur in the lower extremities. In addition, 4% of patients suffered vertebral fractures.

Discussion

The results of this study indicate that patients with fractures are more prevalent between the ages of 26 and 35 and are male. This is consistent with research conducted by Martin et al., which revealed that young adults had the highest incidence of fractures (39.7%), followed by men (25.34%) and women (13.93 %).[7] The prevalence of fractures is more prevalent in the young adult age group because those aged 26–35 years are in a productive age where they have high mobility to conduct their activities outside the house. In addition, Walidatul P et al. report that men are more active and participate in more activities than women, such as working, which can be a risk factor for fractures.[8]

In this study, traffic accidents were the most prevalent cause of fractures. This is due to high-speed driving, inebriated driving, and damaged road conditions [21]. Additionally, the accident mechanism is a risk factor that influences the incidence of fractures [22]. This study is consistent with the findings of Alghnam S et al. reported that traffic accidents are one of the most prevalent causes of fractures in Saudi Arabia [23].

Fractures were more prevalent among military personnel in this study. This is due to the fact that the study was conducted in a Navy hospital, where the majority of patients were military personnel seeking treatment. According to the findings of An SJ et al. there were 23,981 patients with fractures at the Armed Forces Capital Hospital in Korea, with the majority of fractures occurring in the manus region [24]. Stress fractures are the cause of fractures in the military, which are caused by excessive compression on the bones due to increased burdens that occur abruptly and repeatedly during military training [25].

Fractures are the most frequent problem caused by direct or indirect trauma to bones. Fractures can occur in any region of the bone but are most common in the hands and ankles. This is due to the fact that when trauma occurs, the extremities will support the body while falling, and there is no protective device for the extremities that have fallen.[8]

Based on the location of the fracture, the results of this study indicate that patients with fractures of the upper extremities, particularly the clavicle, are more prevalent. This is consistent with research conducted by Pramana MRB et al. which revealed that patients with upper extremity fractures in the Emergency Room of Sanglah General Hospital, Denpasar, Indonesia, were most commonly affected in the clavicle region (47%), and the majority of cases occurred in men aged 26-35 years. The most common location of clavicle fractures is in the middle 1/3 of the clavicle, and the most common cause of clavicle fractures is traffic accidents [26].

In addition, the majority of lower extremity fractures in this study occurred in the femur. According to research conducted by Ridwan UN et al. femur fractures were the most prevalent, accounting for 41.2% of all fractures in the lower extremities, including the tibia, fibula, pedis, and pelvis [27]. In this study, the most prevalent cause of femur fracture was high-energy trauma with the mechanism of injury owing to traffic accidents [28]. Similarly, according to the findings of Sulistyaningsih NK et al. high-energy trauma and low-energy trauma are the causes of femur fractures.

Traffic accidents can result in high-energy trauma [29]. Low-energy trauma, meanwhile, is caused by falling accidents and pathological fractures, such as those caused by cancer, osteoporosis, and others [30].

4. CONCLUSION

According to this study, the majority of fracture patients at Dr. Mintohardjo Navy Hospital in 2022 were male. Moreover, fractures are most prevalent between the ages of 26 and 35, with traffic accidents being the most common cause. The upper extremity, specifically the clavicle region, is the site of the majority of fractures in this study.

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