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Fracture Outpatients Characteristics of West Java Province Occupational Health Hospital (RSUD-KK) in 2024

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Abstract

Fracture is the medical term for broken bones. Fractures often occur as a result of motor vehicle accidents and workplace accidents. With the increasing number of incidents, the data recording of fracture incidents in Indonesia remains suboptimal. This study aims to determine the fracture patient characteristics at the Outpatient Unit of the West Java Occupational Health Hospital in 2024. This study employs descriptive quantitative analysis of secondary data from orthopedic outpatient medical records. 196 samples met the criteria for completeness of research variables. Additional supporting data was also obtained from the West Java Health Office. The majority of patient characteristics were in the 18-44 age group (39.3%), female (58.16%), BPJS users (87.2%), and non-workers (65.8%). The most common fracture locations were the upper extremities (61.7%) (radius: 27.6%), and the lower extremities (29.6%), (femur: 8.2%). The dominant classification was closed fractures and uncategorized conditions. The majority of therapies were analgesics (66.3%). The dominant complications were neglect and malunion. The diversity of fracture patient characteristics was influenced by mobility and bone strength. Analgesics were the primary choice for pain management. This study is expected to be a reference for more comprehensive research and a source of data for hospital policy development.

Background

Data from The National Swedish Trauma Center (2015-2019) showed that 37,266 injury cases were fractures (Holtenius et al., 2023). A fracture is the medical term for a broken bone. Fractures often occur due to trauma caused by falls, motor vehicle accidents, sports accidents, and occupational accidents (Adrifan, 2022). The doctor will determine the diagnosis of fracture based on the classification of fractures, considering the pattern or shape, cause, and location of the fracture, as well as additional tests such as physical examination and X-ray (Campagne, 2020). In Indonesia, particularly in West Java, the number of fractures recorded in hospitals increased significantly in 2022 (Hospital Information System of West Java Province, 2021-2023).

During the fracture healing process, several unexpected events may occur that fall into the category of complications, including nonunion (the bone does not grow back together), union (the bone grows back together but very slowly), and malunion (the bone grows back together but in the wrong direction) (Rante et al., 2023), this can happen when broken bones do not receive support such as plaster casts and as a result of blood supply disruption (Adrifan, 2022; Campagne, 2020). Patients with fractures may also come to health services with additional dislocations. A dislocation is a condition in which the bones in a joint are separated from each other (Kemenkes RSO Soeharso, 2023).

Fractures often occur as the result of traffic accidents (Aryana et al., 2023). According to the Integrated Emergency Response System (SPGDT) report from the West Java Health Department for January-September 2024, there were 1,206 cases of trauma resulting from traffic accidents and 458 cases of trauma not resulting from traffic accidents that were handled through the emergency call program. Additionally, fractures also frequently occur due to workplace accidents. Based on a study conducted in Japan on 34,580 cases of worker falls (accumulated from 2012 to 2016), 8,562 of them occurred due to work injuries or accidents that resulted in broken bones (Hayashi et al., 2023). Certainly, incidents like this can affect the lives of these workers. In Indonesia, one of the hospitals focused on occupational health in West Java is the Regional General Hospital for Occupational Health (RSUD KK), which has extensive patient data related to fracture incidents. On the other hand, despite the increase in the number of accidents, the data recording of fracture incidents in Indonesia remains suboptimal. In fact, proper medical record keeping, whether specifically for fractures or in general, is very beneficial as a systematic and easily accessible source of information for patients, healthcare professionals, and other stakeholders (Keshta & Odeh, 2021). In addition, medical records also help provide an overview of patient characteristics, services, and quality of life (National Library of Medicine, 2019).

Based on these issues, this study aims to examine the characteristics of fracture patients treated at the outpatient unit of the West Java Occupational Health Regional General Hospital (RSUD-KK) in 2024. This study is expected to provide an overview of patient characteristics and health services related to fractures. It is hoped that the data from this study can be utilized as effectively and appropriately as possible. This study is also intended to be valuable for the nursing profession, specifically by emphasizing the importance of detailed, clear, and systematic patient documentation, which enables the accurate description of a patient's condition and the effective development of appropriate nursing care plans.

Methods

This study used descriptive quantitative analysis of secondary data. Data were collected from medical records at the Orthopedic Polyclinic of the Regional General Hospital for Occupational Health. A total of 243 fracture patients were recorded from January to September 2024. The research sample consisted of 196 patients who met the inclusion criteria: 1) patients were outpatients from January to September 2024 at the Orthopedic Polyclinic, 2) complete medical record data for patient characteristics (age, gender, BPJS membership, and occupation). Exclusion criteria: 1) Incomplete patient characteristic data. Based on these criteria, data from January was not included due to differences in characteristic types, making it impossible to analyze.

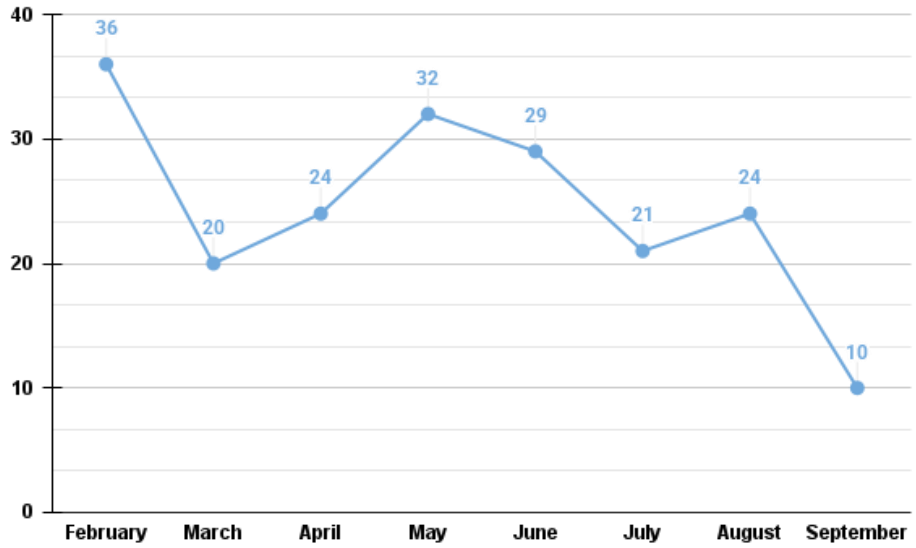
Data processing was initiated with a data cleaning process according to the inclusion criteria. Coding was then performed for all variables except the specific fracture location variable. After that, the data were analyzed using univariate descriptive tests, examining the frequency and percentage of the data, which were then illustrated through tables and diagrams. This data processing was performed using statistical software.

This research is one of the results of the PKKM MBKM Merdeka Belajar Research Internship Program, which has obtained an internship permit from the Occupational Health Hospital with letter number 34419/KS.01/SDK. Ethical clearance has been obtained through a letter of consent to access medical records from the Occupational Health Hospital with letter number 7711/TU.01.02/RSKK. Additionally, there is also supplementary data from the West Java Health Department obtained during the internship period.

Result and Discussion

Number of Fracture Cases

The number of fracture cases in the Outpatient Unit from February to September 2024 is shown in Picture 1, which indicates that fracture cases experienced a fluctuating trend (ups and downs). The highest number of cases occurred in February (36 cases), and the lowest number of cases occurred in September (10 cases). The average number of cases occurring each month is 24-25 cases. The fluctuating trend in fracture cases each month may be attributed to the fact that workplace fractures are not related to the month, as they can occur at any time. Meanwhile, fractures due to workplace accidents are more likely to occur during public holidays or at the end of the school semester, as the number of road users also increases with high mobility (Ridwan et al., 2019) such as in May (32 cases) and June (29 cases).



Picture 1. Trend of Outpatient Fracture Cases from February to September 2024 (n=196)
Source: Secondary data (hospital medical record), 2024

Patient Characteristics

The descriptive characteristics of the subjects are shown in Table 1, which indicates that the most common age group of fracture patients was 18-44 years (77 cases), and the least common age group was 75 years and above (6 cases). Due to the fact that the Occupational Health Hospital has expertise in handling work-related accidents, most of its patients belong to the productive age group (18-44 years). Additionally, this age group also uses vehicles for transportation more frequently and is at greater risk of traffic accidents. The results of this study are in line with research from Ridwan et al. (2019) which explains that fractures predominantly occur among people of productive age because they have high intensity. Another study from Jhonet et al. (2022) and Aryana et al. (2023) also shows that the majority of fracture patients are in early and middle adulthood.

The gender of outpatients with fractures at the Occupational Health Regional General Hospital was dominated by females, with 114 cases (58.16%) compared to males with 82 cases (41.84%), but the difference in numbers was not significant. This study is in line with research from MacDermid et al. (2021) which shows the proportion of women and men in the results of a 4-year study in Ontario for fracture cases shows an almost similar proportion. However, these

results are in contrast to several other studies that show the majority of fracture patients are male (Jhonet et al., 2022; Ridwan et al., 2019; Sembiring & Rahmadhany, 2022). This difference in results is related to the focus of previous research, which was only on traffic accidents.

Table 1. Patient Characteristics (n=196)

Variable	n	%
Age		
0-17 years	35	17.9
18-44 years	77	39.3
45-59 years	50	25.5
60-74 years	28	14.3
75 years and above	6	3.1
Gender		
Males	82	41.84
Female	114	58.16
Types of insurance		
BPJS	171	87.2
Other insurance	3	1.5
General	22	11.2
Employment status		
Employed	67	34.2
Unemployed	129	65.8

Source: Secondary data (hospital medical record), 2024

Table 1 also shows that the insurance status of outpatient fracture patients at the Occupational Health Hospital was dominated by BPJS users with 171 cases (87.2%), followed by general patients with 22 cases (11.2%), and other (private) insurance patients with 3 cases (1.5%). This shows that the use of BPJS is becoming increasingly widespread among the public. The employment status of outpatients with fractures at the Occupational Health Hospital shows that 129 cases (65.8%) are non-workers, which is higher than the 67 cases (34.2%) who are workers. This may be because the RSUD Kesehatan Kerja hospital has become a general hospital and receives many general patients in the area.

Fracture Location and Classification

Table 2 shows that the most common fractures occurred in the upper extremities, with 121 cases (61.7%), with the specific locations of the most common fractures as follows: radius (54 cases), clavicle (18 cases), humerus (16 cases), fingers (14 cases), ulna (9 cases), elbow (8 cases), wrist (1 case), and greater tuberosity (1 case). These results are in line with research from MacDermid et al. (2021) that conducted in Ontario over a period of four years showed that the most common location for fractures was the hand (93,000 cases), with the most common specific bone being the distal radius (47,400 cases). Study from Ihza et al. (2022) also shown that distal radius was the most common fracture location for fracture from occupational incidents or traffic incident.

Table 2. Distribution of Fracture Locations in Outpatient Unit from February to September 2024 (n=196)

Location	N	%
Skull	**1**	**0.5**
Nasal	1	0.5
Neck	**2**	**1.0**
Neck	2	1.0
Upper Extremities	**121**	**61.7**
Radius	54	27.6
Clavicula	18	9.2
Humerus	16	8.2
Finger Hand	14	7.1

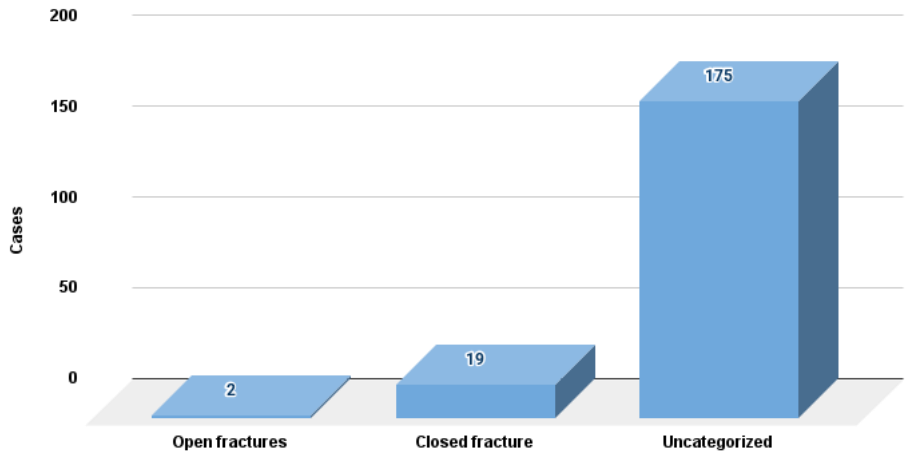
Ulna	9	4.6
Elbow	8	4.1
Wrist	1	0.5
Greater tuberosity	1	0.5
Lower Extremities	**58**	**29.8**
Femur	16	8.2
Tibia	15	7.7
Toes	15	7.7
Fibula	6	3.1
Pedis unspecified	2	1.0
Patella	2	1.0
Calcaneus	2	1.0
Spine	**12**	**6.1**
Vertebrae	6	3.1
Coccygeus	6	3.1
Pelvis	**2**	**1.0**
Pelvis	1	0.5
Pubis	1	0.5
Total	**196**	**100**

Source: Secondary data (hospital medical record), 2024

Table 2 also shows that the second most common skeletal group was the lower extremities (58 cases) with the specific locations in descending order being the femur (16 cases), tibia (15 cases), toes (15 cases), fibula (6 cases), unspecified foot (2 cases), patella (2 cases), and calcaneus (2 cases). These results are consistent with research in RSUD Dr. H Chasan Boesoirie Ternate from Ridwan et al. (2019) which shows that the highest number of lower extremity fractures occurred in the femur (41.2%).

Another skeletal group was the spine, with 12 cases (6.1%) with specific locations in the vertebrae (6 cases) and coccygeus (6 cases). The pelvic bone group comprised 2 cases (1.0%), consisting of the pelvis (1 case) and pubis (1 case). The neck bone group comprised 2 cases (1.0%). The bone group with the lowest number of cases was the skull, specifically the nasal bone, with 1 case.

Picture 2 shows the incidence of fractures based on clinical classification. Only 21 cases were recorded as open fractures (2 cases) and closed fractures (19 cases). The remaining 175 cases did not have classification records, so the researchers created an additional category, namely uncategorized. This shows that the recording of fracture cases at the Occupational Health Hospital still needs improvement.

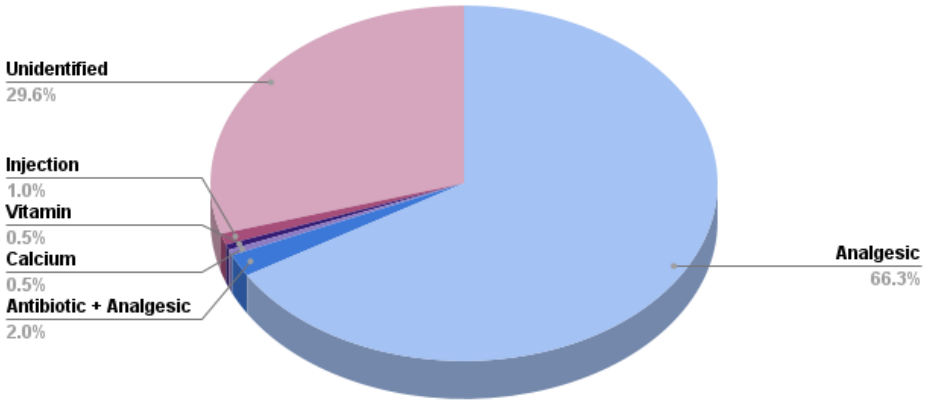


Picture 2. Comparison of Fracture Classification in the Outpatient Unit from February to September 2024 (n=196)
Source: Secondary data (hospital medical record), 2024

The results of this study are in line with previous studies from Sagaran et al. (2017) shows that the majority of fracture patients have closed fractures (86.3%). Risk factors for fractures becoming open or closed can be influenced by bone strength (bone density and mineral content). Open fractures usually occur in cases of high-energy trauma (when the force of the trauma is greater than the strength of the bone) (Desiartama & Aryana, 2017).

The Therapy Received by Fracture Patients

Picture 3 illustrates the types of therapy (medication) administered to patients. Analgesics were the most commonly administered medication, with 130 cases (66.3%). There were also cases of antibiotics + analgesics (4 cases), injections (2 cases), vitamins (1 case), and calcium (1 case). There were 58 cases for which no therapy records were available, so the researchers categorized them as unidentified. This phenomenon indicates that the recording of therapy for fracture patients at the Orthopedic Polyclinic of the Regional General Hospital for Occupational Health still requires further development.



Picture 3. Distribution of Therapy Received by Fracture Outpatient Unit Patients February-September 2024 (n=196)
Source: Secondary data (hospital medical record), 2024

The result of this study is in line with previous research from Neuman et al. (2022) which shows that analgesics are administered more frequently for the management of severe pain during the first 60 days compared to general anesthesia. To date, the management of chronic fracture pain has largely relied on analgesics (NSAIDs and opioids), but further research is needed regarding side effects that may harm patients (Zhao et al., 2022).

Antibiotics are usually given to kill germs that can cause infection or complications in fractures. Fractures are closely related to surgical procedures and therefore carry a risk of infection. Several organisms are commonly found as causes of infection at orthopedic surgical sites: Staphylococcus aureus, Staphylococcus epidermidis, aerobic Streptococcus, anaerobic cocci, and Cutibacterium acnes. (Nizar & Wibowo Ariyanto, 2024).

Correlation of Complications with Fractures

Table 3 shows that of the total 196 cases, there were 33 cases with additional classifications, namely complications of malunion (8 cases), union (7 cases), neglected (10 cases), and fracture dislocation (8 cases).

Table 3. Distribution of Fracture Complications Based on Gender and Skeletal Group (n=196)

Gender	**Malunion**	**Union**	**Neglected**	**Dislocation**	**Total**
Male	2	7	4	5	18
Female	6	0	6	3	15
Total	8	7	10	8	33
Skeletal Group	**Malunion**	**Union**	**Neglected**	**Dislocation**	**Total**
Skull	0	0	0	0	0
Neck	0	0	0	0	0
Upper Extremities	6	5	4	3	18
Lower Extremities	2	2	6	5	15
Spine	0	0	0	0	0
Pelvis	0	0	0	0	0
Total	8	7	10	8	33

Source: Secondary data (hospital medical record), 2024

The results above show that this additional classification occurs more frequently in males (18 cases) than in females (15 cases). In males, the most common complications are union (delayed growth or bone fusion), while in females, the majority of cases are malunion (incorrect bone growth or fusion) and neglected conditions (fractures with delayed or inappropriate treatment). These research results are supported by study from Galo' et al. (2019) which shows that complications, particularly neglected fractures, are higher in men than in women. Men have a higher risk of fractures because they experience more fractures, so the potential for neglected fractures is also higher (Galo' et al., 2019; Sagaran et al., 2017).

Meanwhile, complications of fractures based on skeletal groups only occur in the upper and lower extremities. The majority of complications occurred in the upper extremities (18 cases), with the majority of complications being malunion (incorrect bone growth/union). As for the lower extremities (15 cases), the majority of complications were neglected cases (fractures with delayed treatment and/or inappropriate treatment). These results are in line with Skinner's (2006) opinion in Rhadiatul (2018), which states that malunion fractures can occur due to incorrect treatment or lack of treatment. Fracture complications also often occur due to a lack of patient understanding. In addition, the official website of the Ministry of Health RSO Soeharso states that complications in closed fractures can occur due to rejection of the internal fixation placed in the patient's body. Malunion also often occurs due to ineffective immobilization during the healing process. (Campagne, 2020; Kemenkes RSO Soeharso, 2023; Rante et al., 2023).

Conclusion

Based on the results, it was found that the number of fracture cases showed an upward and downward trend, with the highest number of patients in February and an average of 24-25 cases per month. The majority of fracture patients were aged 18-44 years, female, BPJS users with unemployed status. The most common fracture location in the upper extremities was the radius. For the lower extremities, the majority occurred in the femur. The most common clinical classification was closed fracture, with the most complication was neglected fracture and malunion fracture. The most common therapy was the administration of analgesics.

This study is expected to be useful as a reference for more comprehensive research and a source of data for hospital policy development. On the other hand, this study could help the nursing profession to understand the importance of proper documentation, which can describe the patient’s health and needs. The recommendation for future researchers is to identify more contributing factors. The recommendation for the Occupational Health Hospital is to improve the medical record.

Gratitude

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