

EPIDEMIOLOGY OF FEMUR FRACTURE IN ADULTS AT RSUP SANGLAH JANUARY 2020-DECEMBER 2021

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DOI: <https://doi.org/10.5281/zenodo.7493967>

Published Date: 30-December-2022

Abstract: Introduction: The estimated occurrence of femur fractures in the world is 1 million - 2.9 million people. The ratio of the incidence of femoral fractures worldwide is 14% in low-income countries, 39% in low-middle-income countries, and 38% in upper-middle-income countries. Unfortunately, there were no epidemiological data yet about femoral fractures in adult patients at RSUP Sanglah, so the researchers are interested in researching the epidemiology of femur fracture in adults at RSUP Sanglah in January 2020-December 2021. Methods: This study is a type of descriptive study. The data that has been collected will be continued with simple statistical calculations and a univariate descriptive analysis will be carried out using Statistical Product and Service Solutions (SPSS) 22 software. The collected data will be processed and presented in the form of a table of the distribution of femoral fracture patients by age, gender, fracture type, and fracture location. Results: The incidence of femoral fracture patients in adults at the Sanglah Central General Hospital Denpasar for the period January 2020-December 2021 was obtained as many as 223 cases. The age prevalence of people with femoral fractures in adults at the Sanglah Central General Hospital Denpasar for the period January 2020-December 2021 the most common with an age range of 18-25 years as many as 60 cases (27%). The prevalence of the sexes of people with femoral fractures due to traffic accidents was most prevalent in men as many as 130 cases (58.3%). The prevalence of fracture types in people with femoral fractures was found in closed femoral fracture that is 186 cases (83.4%). The prevalence of fracture sites in femoral fracture sufferers was found in the middle third as many as 83 cases (37.2%). Conclusion: In this study, the characteristics of femoral fractures in adults at the Sanglah Central General Hospital Denpasar for the period January 2020-December 2021 were more common in men, with the most age group of 18-25 years, the most types of fractures were closed fractures, and the most locations were in the middle third.

Keywords: Epidemiology, femur fracture, adults.

I. INTRODUCTION

Fracture is a breakdown of the bone continuity structure.^[1] Fractures are generally the result of injury and become one of three causes of death in people aged 5-44 years in the world. Some fractures are secondary result of a disease process such as osteoporosis that causes fractures pathological one. Fractures are divided according to the contact of the outside world, namely closed fractures and open fractures. A closed fracture is a fracture in the absence of complications, the skin is intact, the bone does not come out through the skin. Open fracture is a fracture that damages the skin tissue, because of the relationship with external environment, the open fracture has the potential to become infected.^[2] Epidemiological data in 2013 showed the incidence of fractures in Indonesia due to injury was 5.8%. Traffic accidents are one of the most common causes of femur fractures.^[3]

The estimated occurrence of femur fractures in the world is 1 million-2.9 million people. The ratio of the incidence of femoral fractures worldwide is 14% in low-income countries, 39% in low-middle-income countries, and 38% in upper-middle-income countries.^[4] In Indonesia, according to the Indonesian Ministry of Health, of the many fracture cases, fractures of the lower extremities due to accidents have the highest prevalence among other fractures, which is around 46.2%. Of the 45,987 people with accidental lower limb fractures, 19,629 had fractures of the femur. Besides being caused by traffic accidents, femur fractures can also be caused by falls from a height and direct trauma.^[2] Femur fractures are commonly associated with multiple trauma and are often treated as an orthopedic emergency.^[5]

The clinical manifestations of femoral fractures are almost the same as the other clinical fractures of long bones such as pain, loss of function, deformity, shortening of the extremities due to muscle contraction, crepitus, swelling, and localized discoloration of the skin resulting from trauma. Diagnosis is based on medical history and physical examination through look, feel, and move as well as investigations, radiology, and routine blood tests.^[6]

Management of femoral fractures can be divided into two, namely surgical and non-surgical. At the age of children, they still have the ability to regenerate bone so that the treatment carried out is more dominant without surgery. Surgery is recommended for patients with femoral fractures to prevent complications such as avascular necrosis, malunion, non-union, and compartment syndrome. Postoperative management of femoral fractures also needs attention. Surgery treatment may result in problems or complications such as tingling, pain, muscle stiffness, swelling or edema and pale in the operated limb.^[7]

Remember that femoral fractures are an emergency condition, it is important to receive special attention in the number of cases that occur and the treatment. Femur fractures is the common fracture that occurs in Indonesia with the prevalence reached 39% from the total cases.^[8] Unfortunately, there were no epidemiological data yet about femoral fractures in adult patients at RSUP Sanglah. So based on the above, the researchers are interested in researching the epidemiology of femur fracture in adults at RSUP Sanglah in January 2020-December 2021.

II. METHODS

This study was a descriptive study to determine the epidemiology of femoral fracture in adults cases at the Sanglah Central General Hospital Denpasar for the period January 2020-December 2021. The collection of samples in this study was conducted non-randomly with a total sampling technique. Inclusion criteria in this study were patients aged 18-65 years, all medical record data of patients diagnosed with femoral fractures in adults at Sanglah Hospital for the period January 2020-December 2021, and patients have data according to the variables studied. Patients suffering from pathological femur fracture, and concomitant fracture of pelvic and spine were excluded from the study.

The collected data will be processed and presented in the form of a table diagram, or a graph of the distribution of femoral fracture patients by age, gender, fracture type, and fracture location. This study was approved by Research Ethical Department of Faculty of Medicine, Udayana University, with the number of 2911/UN14.2.2.VII.14/LT/2022

III. RESULTS

The number of respondents in this study was 223 people, patients who experienced femoral fracture in adults at the Sanglah Central General Hospital Denpasar for the period January 2020-December 2021. This study examined the characteristics of fracture patients including age, gender, type of fracture and location of femoral fracture. The results of a more complete study on the distribution of frequency and characteristic percentage of femoral fracture patients in adults at the Sanglah Central General Hospital Denpasar for the period January 2020-December 2021, are described in the table below.

In TABLE 1, the most common incidence of femoral fractures in adults at Sanglah Central General Hospital Denpasar for the period January 2020-December 2021 is at the age of 18-25 years, which is 60 cases (27%). Then followed by the age of 56-65 years as many as 56 cases (25%), then the age of 46-55 years, namely 45 cases (20%), then at the age of 26-35 years as many as 39 cases (17%), and the least is at the age of 36-45 years which is 23 cases (10%).

TABLE 1. Sample frequency distribution by age

Age	Total	Presented
18-25	60	27%
26-35	39	17%
36-45	23	10%
46-55	45	20%
56-65	56	25%
Total	223	100%

Based on TABLE 2, the sex of femoral fracture sufferers in adults was most found in men, that is 130 cases (58.3%), while in women as many as 93 cases (41.7%).

TABLE 2. Sample frequency distribution by sex

Gender	Sum	Presented
Woman	93	41,7%
Man	130	58,3%
Sum	223	100%

In TABLE 3 below, the most types of femoral fractures in adults were closed femoral fractures, which were 186 cases (83.4%), while open femoral fractures were 37 cases (16.6%).

TABLE 3. Sample frequency distribution by type of fracture

Types of fractures	Sum	Presented
Closed fracture	186	83,4%
Open fracture	37	16,6%
Sum	223	100%

Based on TABLE 4, the distribution of samples based on the location of femoral fractures was the most in the middle third, which was 83 cases (37.2%) followed by fractures in the femoral neck, which was 43 cases (19.3%). Then the third location is Intertrochanter, which was 37 cases (16.6%), then in the distal section, which was 23 cases (10.3%), then in the intercondylar that is 21 cases (9.4%), then in the proximal part as many as 13 cases (5.8%). The location of the femoral fracture that is the least common case is in the head section, which is 3 cases (1.3%).

TABLE 4. Sample frequency distribution by type of fracture location

Types of fractures	Sum	Presented
Distal shaft femur	23	10,3%
Head femur	3	1,3%
Intercondylar femur	21	9,4%
Intertrochanter femur	37	16,6%
Middle third shaft femur	83	37,2%
Neck femur	43	19,3%
Proximal shaft femur	13	5,8%
Sum	223	100%

IV. DISCUSSION

The results of this study show that cases of femoral fractures in adults at the Sanglah Central General Hospital Denpasar for the period January 2020-December 2021 are in the age range of 18-25 years, which is as many as 60 cases (27%). The high number of cases of femoral fractures at a productive age is often due to high mobility at that age, especially in carrying out daily activities such as exercising and driving so that it is prone to accidents that cause femoral fractures. The incidence of accidents that cause fractures occurs more in the young age group, this is because the activities of young people outside the home are quite high, with fast movements can also increase the risk of collisions or accidents that cause fractures.^[9] Then the results showed that the age of patients who experienced the second most femoral fractures was at the age of 56-65 years as many as 56 cases (25 %). Fractures in old age can be explained as osteoporotic fractures where bone loss has begun to occur.^[10]

In this study, the most cases of femoral fracture in adults at the Sanglah Central General Hospital Denpasar for the period January 2020-December 2021 were found in men, that is 130 cases (58.3%), while patients who were female were 93 cases (41.7%). These results are in accordance with a WHO study that showed that 73% of the victims of fatal traffic accidents were men.^[11] Research conducted at Tugurejo Hospital Semarang in 2017 also showed that the prevalence of femoral fracture sufferers due to traffic accidents in men (70%) was higher than that of women (30%).^[12] The high number of cases of femoral fractures due to traffic accidents in men is because men have high speed driving behavior, causing more fatal accidents than women.^[13]

In this study, the type of femoral fracture in adults at the Sanglah Central General Hospital Denpasar for the period January 2020-December 2021 that most often occurs is closed femoral fracture, which is 186 cases (83.4%), while open femoral fracture is 37 cases (16.6%). This result is in accordance with research conducted by Ropyanto, where the most common type of femoral fracture is a closed femoral fracture, which is 71 cases (85%), followed by an open femoral fracture of 13 cases (15%).^[14] This is because the femur is coated and attached with strong and thick muscles, so it often causes closed fractures in the femoral region.^[15]

In this study, it was found that the location of the femoral fracture that most often occurs is the middle third fracture, which is 83 cases (37.2%). This study is in accordance with what has been carried out at Dr. M. Djamil Hospital, the location of the femoral fracture that most often occurs is in the middle third as much as 66.6%. Fractures in the middle third often occur due to traffic accidents, because the position of the femur is parallel to the bumper of the car so that when an accident, the medial femur is often affected.^[16]

V. CONCLUSION

In this study, the characteristics of femoral fractures in adults at the Sanglah Central General Hospital Denpasar for the period January 2020-December 2021 were more common in men, with the most age group of 18-25 years, the most types of fractures were closed fractures, and the most locations were in the middle third. The incidence of femoral fracture patients in adults at the Sanglah Central General Hospital Denpasar for the period January 2020-December 2021 was obtained as many as 223 cases.

The age prevalence of people with femoral fractures in adults at the Sanglah Central General Hospital Denpasar for the period January 2020-December 2021 the most common with an age range of 18-25 years as many as 60 cases (27%). The prevalence of the sexes of people with femoral fractures due to traffic accidents was most prevalent in men as many as 130 cases (58.3%). The prevalence of fracture types in people with femoral fractures was found in closed femoral fracture that is 186 cases (83.4%). The prevalence of fracture sites in femoral fracture sufferers was found in the middle third as many as 83 cases (37.2%).

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