

# AGE- AND SEX-SPECIFIC EPIDEMIOLOGY OF EXTRA-ARTICULAR FEMORAL AND TIBIAL FRACTURES 2005-2022

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## Introduction

Within this descriptive case study, we aim to analyze the epidemiology of extra-articular femoral and tibial fractures in order to uncover patient-specific covariates that are associated to certain fracture locations and fracture types. We also aim to provide quantitative data of the well-known bimodal distribution of severe extra-articular lower-limb long bone fractures that appear to have maxima for young men and elderly women [1].

The main research questions are how combinations of age and sex are associated with extra-articular fractures of the lower limb. What are risks of certain patient groups to suffer an extra-articular fracture of tibia or femur? What are biomechanical factors associated to the etiology of certain fracture locations?

## Methods

The retrospective data evaluation was approved by the local ethics committee (EA4/099/22).

### Inclusion criteria:

- Patient age of 18 years or more.
- Patients undergoing surgery for a fracture of a long bone of the lower extremity (femur or tibia) performed between 01.01.2005 and 30.04.2022.

### Exclusion criteria:

- All critical clinical conditions at the time of the operation (e.g. unstable circulatory conditions, not fit for surgery and/or consent of treatment).
- Pregnant and lactating patients.
- Persons who are not legally competent.
- Proximal femur and femoral neck fractures.

## Results

We identified 195 fractures from 169 unique patients of which had 155 one fracture, 12 had 2 fractures and 2 had 3 fractures.

	Sex	Age	Weight	Height	Bone
Number	64	43.3	81.0	1.75	67
or	female	(15.5)	(15.8)	(0.09)	femur
Mean	/	years	kg	m	/
(Standard deviation)	130				128
	male				tibia
Missing values	1	0	94	94	0

Table 1: Demographic fracture patient data.

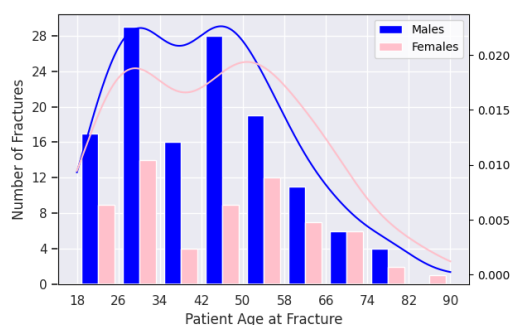


Figure 1: Histogram of the relation between AGE and SEX of lower-limb extra-articular fracture patients.

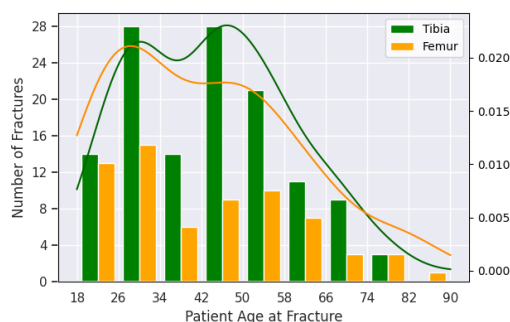


Figure 2: Histogram of the relation between AGE and BONE TYPE of fracture patients of lower-limb extra-articular fracture patients.

## Discussion

Extra-articular fractures of the lower limb seem to be associated to young or middle-aged patients with higher incidence for young males and tibial fractures. The second peak of the bimodal distribution for elderly women of 60 years and above as shown for all fractures [1], could not be observed here for extra-articular fractures of tibia and femur. We still see bimodal distributions, but between young and middle-aged patients and similar for men and women. Biomechanical factors associated to the etiology of extra-articular fractures of the lower limb remain to be elucidated, but high-speed trauma injuries might play the main role as seen in the high number of multiple fractures.

## References

1. Court-Brown & Caesar, *Injury*, 37(8), 691-7, 2006.

## Acknowledgements

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