

ABSTRACT

Background: No local study has been done to determine the anthropometric features of the distal femur, compared it with other studied populations and some of the total knee replacement implants available.

Objective: To determine the Medio-Lateral (ML) width of the condyles of the femur, the anteroposterior (AP) diameter of the condyles and the intercondylar notch width, determine the relationship between length of the femur and the distal femur measurements, compare the results with other studied populations and the femoral components of widely used total knee replacement implants. **Methods:** The distances were measured using digital vernier calipers on dried femora which were grossly not deformed. The dimensions of the femoral components of widely used total knee replacement implants were obtained from respective product monographs.

Results: A total of 62 grossly normal femora were used in the study, 29 from the right side, and 33 from the left side. Average femoral length was 46.12cm, average medio-lateral width of condyles was 68.44mm, with average anteroposterior width of the lateral condyle being 61.20mm, while that of the medial condyle was 58.01mm. There was no significant difference between the dimensions of the left and right sided femora. There was a positive correlation between length of the femur and the mediol-lateral and anteroposterior widths of the condyles. There was no correlation between length of femur and the intercondylar notch width. The distal femur dimensions were greater than those reported in studies on Indian, Chinese and Malay populations, but lesser than the dimensions reported in studies on Greek femora. Comparison with femoral components of eight total knee replacement implants showed that three of the components had dimensions that closely matched those of the femora.

Conclusion: The dimensions of the distal femur of the adult Kenyan differs from other ethnic populations. Of the implants sampled, most had dimensions that did not closely match those of the femora studied. Local clinical studies are needed to determine the clinical significance of the mismatch on the outcome of total knee replacement.

Key words: Anthropometry, Width of condyles, Aspect ratio, Total knee replacement