

## The FAITH and HEALTH Trials: Are We Studying Different Hip Fracture Patient Populations?

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**Purpose:** Femoral neck fractures in the elderly remain a leading cause of disability and morbidity worldwide following low energy trauma. Over the past decade, 2 high-impact large prospective multicenter randomized controlled trials were conducted to evaluate the success of 2 different surgical strategies for treatment of low-energy femoral neck fractures in patients  $\geq 50$  years. The FAITH trial randomized patients with both undisplaced and displaced femoral neck fractures to receive either cancellous screws or a sliding hip screw. The HEALTH trial randomized patients with displaced femoral neck fractures to either a hemiarthroplasty or a total hip replacement. This preplanned study aimed to evaluate whether patient populations in both trials had different demographics and medical comorbidities. Furthermore, we specifically compared displaced femoral neck fractures, classified as Garden 3 or 4, that were treated with internal fixation in the FAITH trial to the HEALTH trial patients.

**Methods:** Patient demographics, medical comorbidities, and fracture characteristics from both FAITH and HEALTH trials were compared. The FAITH trial patients with displaced fractures were then identified and separately compared to the HEALTH trial patients. Statistical analysis using t tests and  $\chi^2$  tests were used to compare differences for the following factors selected a priori: sex, age, osteoporosis status, and ASA (American Society of Anesthesiologists) class.

**Results:** In the FAITH trial, the mean age of the 1079 patients was 72 (12) years, as opposed to the mean age of 79 (8) years for the 1441 patients in the HEALTH trial. The HEALTH patients were older, more often white and less ethnically diverse, used more medication, and had more comorbidities. Of the 1079 patients in the FAITH trial, 336 patients had displaced fractures. Their mean age was significantly lower than the HEALTH trial patients (66 vs 79 years;  $P < 0.001$ ). The HEALTH trial patients were also significantly more likely to be female, have ASA classification Class III/IV/V, and carry a known diagnosis of osteoporosis, as compared to the FAITH trial patients with displaced femoral neck fractures ( $P < 0.001$ ).

**Conclusion:** This study demonstrates significant differences between the patients enrolled in the FAITH (internal fixation) and HEALTH (arthroplasty) trials. Although both studies focused on femoral neck fractures with similar inclusion criteria of patients over 50 years of age with a lower-energy mechanism, the enrolled patient populations were quite different. Patients in the FAITH trial with displaced femoral neck fractures treated with internal fixation as opposed to replacement were younger, healthier males with lower rates of osteoporosis. This sheds light on the inherent selection bias of patients with displaced fractures enrolled into a femoral neck fracture fixation trial.