

Δ Estimating the Economic Impact of Open Tibial Fractures in Tanzania

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Purpose: Open tibia fractures contribute to high disease burden in low- and middle-income countries (LMICs). The economic impact of open tibia fractures in LMICs is largely unknown. This study estimates indirect cost of open tibia fractures and their sequelae in Tanzania.

Methods: This is a planned secondary analysis of data from a pilot randomized controlled trial at the Muhimbili Orthopaedic Institute (Dar es Salaam, Tanzania) evaluating local antibiotics for open tibial fractures (pGO-Tibia Trial). Indirect cost data were collected at baseline and every 3 months for 1 year, which included work status, loans, possessions sold, and outside health-care costs. Lost productivity was calculated by multiplying missed work by the average Tanzanian wage based on World Bank data. Demographics and injury characteristics were compared to adjust for potential confounding. The 2- sample t-test and Fisher's exact test were used to compare patients with no complications to those diagnosed with infection or nonunion.

Results: Of the 100 participants enrolled and randomized, 80 completed 1-year follow-up. There were 22 patients who were diagnosed with infection (16%) and/or nonunion (13%). 79 worked prior to injury. Mean time from surgery to return to work was 173 days. The time to return to work was 171 days for patients with uncomplicated fractures compared to 178 days for those with infection or nonunion. The estimated productivity loss was \$120 USD per patient. Forty (40%) acquired loans post-surgery including 37.6% with uncomplicated fractures compared to 59.1% for complicated fractures. Loans were larger for those who experienced complications compared to uncomplicated fractures (mean \$72 USD vs \$40 USD, respectively). 23 participants endorsed increased difficulty affording household expenses and 18 sold belongings for income. Mean total indirect costs, including lost productivity, transportation, and outside health-care costs was \$312 per patient, which is equivalent to 9.3 months of average Tanzanian wages.

Conclusion: This study highlights the economic burden of open tibial fractures in LMICs. Increased borrowing among patients with infection and/or nonunion suggests greater economic impact for these complications.