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Fragility fractures in sub-Saharan Africa: time to break the myth

The number of older adults (aged ≥60 years) in Sub-Saharan Africa is two times higher than in northern Europe; a figure that is expected to increase from 46 million in 2015 to 157 million by 2050.[1] In sub-Saharan Africa, at age 60 years, life expectancy is 16 years for women and 14 years for men, suggesting that for individuals who survive challenges in early life, a long period of old age is now a reality.[1] As sub-Saharan Africa undergoes an epidemiological transition as a result of rapid urbanisation, the burden of non-communicable diseases, including osteoporosis, is rising. Similar to many chronic diseases such as hypertension, osteoporosis often remains undiagnosed until a fracture occurs. Increasing evidence[2,3] is dispelling the outdated myth that fragility fractures are not a problem in sub-Saharan Africa.

Fragility fractures, sustained after a fall from a standing height or less, occur in the context of multimorbidity, often in combination with other syndromes associated with ageing, such as sarcopenia and frailty. Furthermore, high HIV prevalence, undernutrition and overnutrition, high trauma rates (eg, road traffic injuries), and marked socioeconomic inequalities, all of which are observed in sub-Saharan Africa, are known to increase fragility fracture risk in high-income settings.[4] The scale-up of HIV treatment has substantially improved survival, and consequently HIV is now considered a chronic disease with associated immunosenescence and premature ageing. Paradoxically, exposure to specific antiretroviral drugs further increases fracture risk.[4] Considering the prevalence of HIV infection in sub-Saharan Africa, the accelerated rollout of antiretrovirals, and the lifelong nature of treatment, fracture burdens are expected to increase across all ages and in both sexes, with more younger people (aged <60 years) affected in this region than elsewhere, directly affecting their capacity to work, provide for their families, and contribute to local and regional productivity.

Vertebral and hip fractures both substantially reduce quality of life, and although vertebral fractures are more common than hip fractures, hip fractures have the greatest health and economic impact.[5] Even in high-income settings, mortality 12 months after a hip fracture is 30%,[6] which is a poorer prognosis than that for most cancers. In the UK, half a million fragility fractures occur annually, incurring direct health costs of £4·3 billion[7] in addition to the costs of disability, with the majority of survivors requiring long-term social support. The mean global health and social care cost in the first year following a hip fracture is US$43 669 per patient, with immediate inpatient care costing on average $13 331, with highly variable social care costs.[8] High-income settings have health and social systems that facilitate long-term care; sub-Saharan Africa does not. Thus, younger family members are likely to take responsibility for the care of older relatives, further affecting individuals of working age. To date, no studies have been published on the health costs of fractures within the sub-Saharan Africa region.[8]

The predicted increase in fractures in sub-Saharan Africa now means there is an urgent need to strengthen health-care systems. Prevention of fractures is preferable to, and cheaper than, treating them once

***Panel*: Musculoskeletal health research priorities for sub-Saharan Africa**

Epidemiology
- Incidence and prevalence of fragility fractures, including geographical and ethnic variation, urban and rural differences, sex-specific data
- Outcomes after fracture, including mortality, function and disability, quality of life
- Risk factors for fracture, especially HIV and antiretrovirals
- Understanding musculoskeletal disease within the context of multimorbidity
- Modelling estimates of future burdens of musculoskeletal disease

Health services research
- Understanding fracture care pathways
- Capacity and delivery of health services
- Patients' views and experiences of health-care services
- Current and future costs of fracture care
- Developing innovative service delivery models, including use of diagnostic imaging

Underlying disease mechanisms
- Understanding genetic determinants of musculoskeletal phenotypes
- Factors determining quality and quantity of bone
- Skeletal biomechanics including the role of muscle
- Interactions between musculoskeletal biology and other systems

Clinical research
- Strategies for effective fracture prevention in sub-Saharan Africa
- Clinical tools to focus interventions to high-risk groups
- Effectiveness of established treatments within sub-Saharan Africa populations

they occur. A range of relatively inexpensive generic osteoporosis treatments that reduce the risk of fragility fractures are now widely available, priced from $12 per year; however, none are currently included on the WHO Essential Medicine List. Operative treatment requires secondary-level care and hence long-term investment in orthopaedic training, which is not universally available in sub-Saharan Africa. Orthopaedic care should be delivered as part of a multidisciplinary pathway, but the preparedness of such teams is poorly understood, although indications suggest resources are grossly inadequate.[9]

Fragility fractures are life-changing events. We must learn from high-income countries, where osteoporosis treatment is often initiated too late, following multiple fractures and their accumulated morbidity. In settings with competing communicable and non-communicable health priorities, individuals with health outcomes that cause the greatest disability and health costs should be prioritised. In sub-Saharan Africa, an urgent need exists to understand the epidemiology of fractures, the associated financial and societal costs, and the health-care infrastructure required (panel). Country-specific data are essential to inform health policy and resource allocation.

At present, a lack of awareness persists regarding the burden of musculoskeletal ageing in sub-Saharan Africa. The third Sustainable Development Goal aims to ensure healthy lives for all at all ages and, in 2015, WHO highlighted the need for action to prevent and manage fragility fractures in sub-Saharan Africa in the next decade.[10] The myth that osteoporotic fragility fractures only occur in older white women is outdated. An urgent and compelling need exists to deliver research that can inform prevention and management of fragility fractures in sub-Saharan Africa.

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1 Aboderin IA, Beard JR. Older people's health in sub-Saharan Africa. *Lancet* 2015; **385:** e9–11.
2 Conradie M, Conradie MM, Scher AT, Kidd M, Hough S. Vertebral fracture prevalence in black and white South African women. *Arch Osteoporos* 2015; **10:** 1.
3 Paruk F, Matthews G, Cassim B. Osteoporotic hip fractures in Black South Africans: a regional study. *Arch Osteoporos* 2017; **12:** 107.
4 Compston J. HIV infection and bone disease. *J Inter Med* 2016; **280:** 350–58.
5 Griffin XL, Parsons N, Achten J, Fernandez M, Costa ML. Recovery of health-related quality of life in a United Kingdom hip fracture population. The Warwick Hip Trauma Evaluation—a prospective cohort study. *Bone Joint J* 2015; **97:** 372–82.
6 Neuburger J, Currie C, Wakeman R, et al. The impact of a national clinician-led audit initiative on care and mortality after hip fracture in England: an external evaluation using time trends in non-audit data. *Medical Care* 2015; **53:** 686–91.
7 Leal J, Gray AM, Prieto-Alhambra D, et al. Impact of hip fracture on hospital care costs: a population-based study. *Osteoporos Int* 2016; **27:** 549–58.
8 Williamson S, Landeiro F, McConnell T, et al. Costs of fragility hip fractures globally: a systematic review and meta-regression analysis. *Osteoporos Int* 2017; **28:** 2791–800.
9 Iddriss A, Shivute N, Bickler S, et al. Emergency, anaesthetic and essential surgical capacity in the Gambia. *Bull World Health Organ* 2011; **89:** 565–72.
10 WHO. World report on ageing and health. Geneva: World Health Organization, 2015.