# Abstract

**Introduction**: Fractures are common in children with healthy bones. However, the literature has shown that some of these fractures may be related to underlying bone pathology such as vitamin D deficiency. The aim of this study was to determine if there is vitamin D insufficiency or deficiency in children five years of age and younger with femur fractures at Charlotte Maxeke Johannesburg Academic Hospital.

**Methods**: This study was a retrospective review of children with femur fractures admitted to the Charlotte Maxeke Johannesburg Academic Hospital paediatric orthopedic unit. The records of children admitted between 1 January 2017 and 31 December 2017 were retrieved. Demographic data were collected from clinical notes and electronic discharge summaries. Radiographs were assessed and blood results were retrieved.

**Results**: Forty-five (n = 45) patients were enrolled for this study. The study sample comprised of 30 (66.7%) males with a mean age of 2.9 ± 1.3 (SD) years and 15 (33.3%) females with a mean age of 1.9 ± 1.1 (SD) years. The overall mean age for the sample population was 2.56 years (SD = 1.3, CI = 2.21 – 2.95). Of these patients, 42 (93.3%) were Black, 2 (4.5%) were White and 1 (2.2%) was Coloured. Falls accounted for the only mechanism of injury (n = 45). Spiral fractures accounted for the greatest proportion of fractures, followed by transverse fractures. Most patients (n = 34, 75.6%) came from inner city areas whilst the minority were from outer city areas (n = 11, 23.4%). Most children (68.9%) with femur fractures had low levels of serum 25-hydroxyvitamin D compared to children (31.1%) who had sufficient levels of serum 25-hydroxyvitamin D.

**Conclusion**: This study showed that 68.9% of the children were vitamin D deficient or insufficient and 75.6 % were from inner city areas. This suggests that children aged five years and younger with femur fractures in our hospital may benefit from routine blood testing and vitamin D supplementation.