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### **Breastfeeding and Bone Mineral Density in Adults Ages 30-46 in The Manitoba Personalized Lifestyle Research (TMPLR) Study**

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#### **Background:**

Osteoporosis is a highly prevalent disease originating in early life. Breastfeeding is proposed to “program” skeletal development, however, its effect on bone mineral density (BMD) is unclear, especially beyond early childhood.

#### **Objective:**

We examined the association of breastfeeding in infancy with BMD in adulthood.

#### **Methods:**

We used data from 410 Manitobans ages 30-46 years from the cross-sectional TMPLR study. Self-reported infant feeding data (validated against maternal responses in a subset) was used to assess breastfeeding in three ways: any breastfeeding (never vs. ever), breastfeeding duration (in months) and breastfeeding exclusivity (no breastfeeding, partial breastfeeding, and full breastfeeding). Dual-energy X-ray Absorptiometry was used to measure BMD at the whole body, femoral neck, non-dominant forearm, and lumbar spine (L1-L4 vertebrae). Associations were determined using multivariable regression analyses with adjustment for participant age, sex, body size and other potential confounders.

#### **Results:**

Among 285 participants (70%) who reported being breastfed, whole body BMD was significantly higher compared to non-breastfed counterparts after adjusting for current age, sex, height, weight, alcohol consumption, physical activity, current and early life socioeconomic status (adjusted beta estimate +22.7 mg/cm<sup>2</sup>, 95% CI [0.3, 45.1], equivalent to +1.9%, p =0.046). Similar trends were observed at the femoral neck, forearm and lumbar spine, but were not significant in the adjusted models. Unexpectedly, these associations tended to be stronger among those who were partially breastfed (breast milk and formula) than those who were fully breastfed (breast milk only). There was no apparent dose-response relationship according to the duration of breastfeeding, although we had limited power to examine these potential “dose effects” (n=173).

#### **Conclusion:**

Our results suggest that any breastfeeding, regardless of duration or exclusivity, may contribute to a small but clinically relevant increase in BMD in mid-adulthood. Breastfeeding may be a strategy to protect against low bone mass in later life.