



Calcium Channel Blockers and Bone Health: A Systematic Review of Preclinical and Clinical Evidence

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Background

- I. The increase in the ageing population (> 65 years) worldwide has caused a rising socio-economic and health burden caused by 2 major age-related health issues, hypertension and osteoporosis
- II. One in three elderly adults have a fall each year, of which 6% have a fracture
- III. Polypharmacy has caused suspicion of a link between the two, with robust evidence to justify it
- IV. While preclinical data suggest positive CCB-mediated effects on bone remodeling, clinical findings on bone mineral density (BMD) and fractures are inconsistent



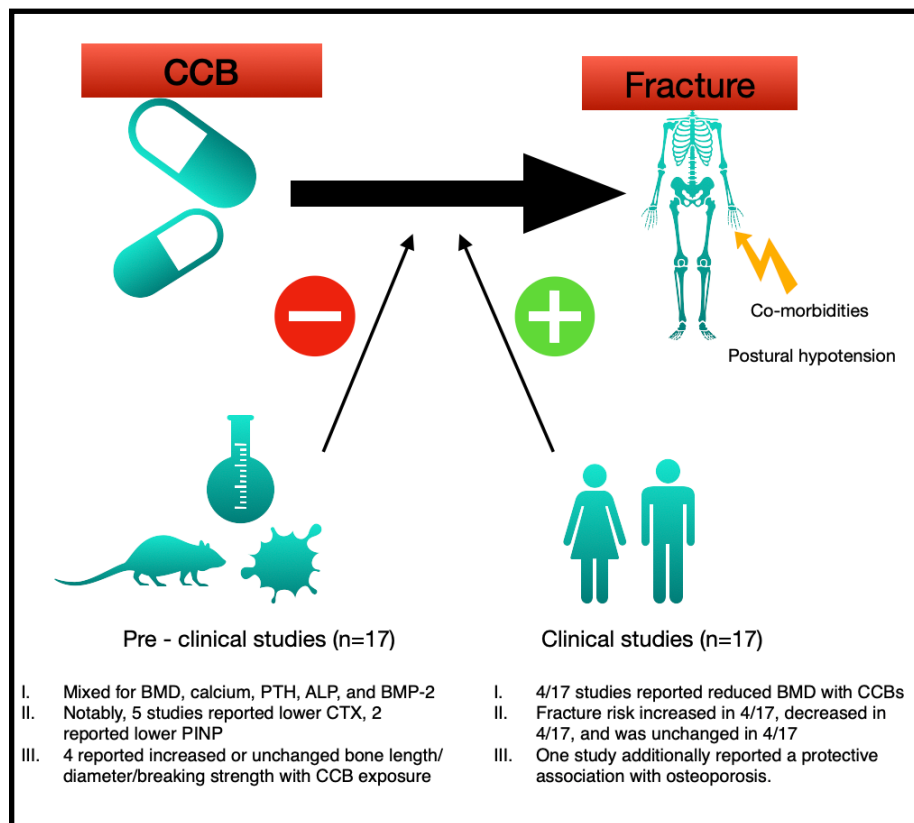
Ergo we systematically evaluated the relationship between CCB use, bone metabolism, and fracture outcomes

This is the first review that comprehensively summarises the role and outcomes of CCB in the pre-clinical and clinical context

Risk of bias assessment

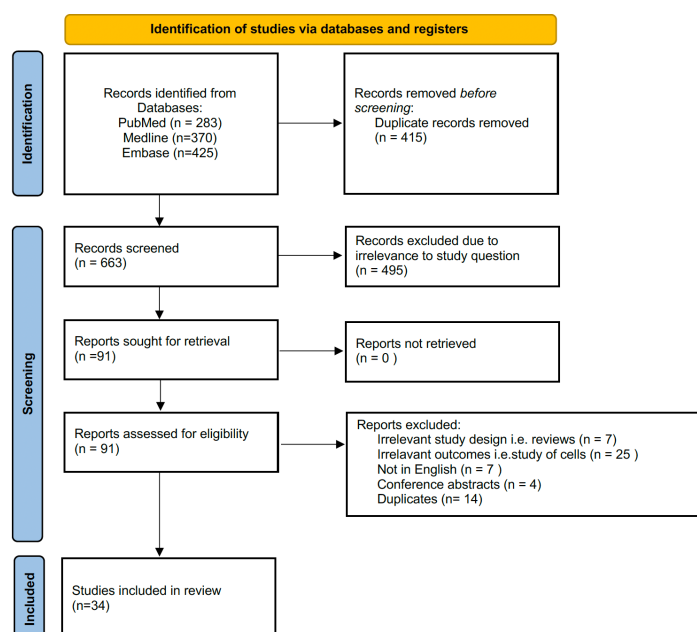


Results



Methodology

PRISMA 2020 flow diagram for new systematic reviews which included searches of databases and registers only



Conclusion

Pre-clinical studies report a dose dependent protective correlation on bone metabolism following CCB use, albeit with mixed findings due to lack of standardised experimental testing

Clinical observational data predominantly suggests and increased risk of fracture and reduced BMD

Discrepancies may reflect confounding (e.g., comorbidities) and non-skeletal pathways affecting falls risk (CCB induced orthostatic hypotension, sarcopenia); these mechanisms remain hypothesis-generating

Take home message

Standardized preclinical endpoints and large, well-adjusted prospective cohorts—stratified by dihydropyridine vs non-dihydropyridine agents, dose, and duration—are needed to clarify skeletal effects.

References



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