

Fig. S1 Flow diagram of the study selection procedure

RCTs: randomized controlled trials

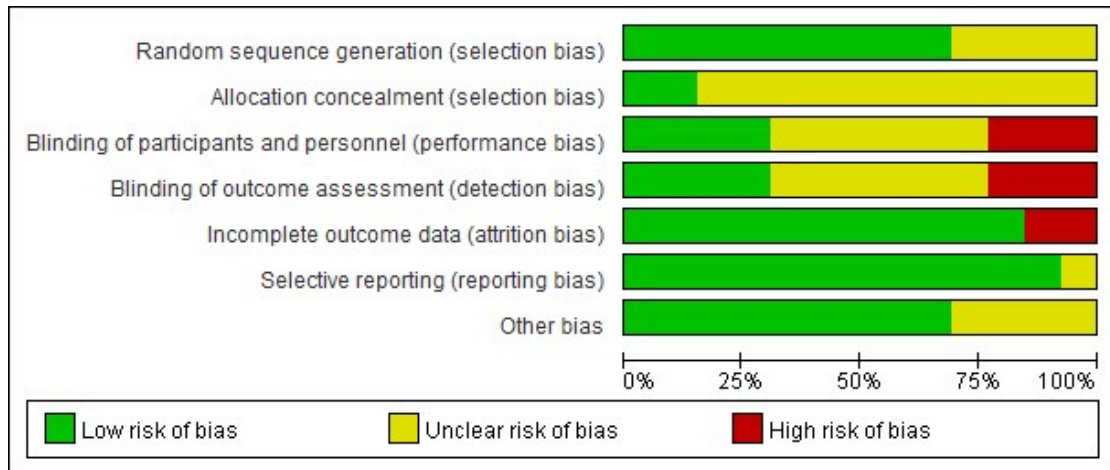


Fig. S2 Risk of bias graph: review authors' judgements about each risk of bias item presented as percentages across all included studies

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Balton et al.2007	+	+	+	+	+	?	+
Bess et al.1997	+	+	+	+	+	?	+
Bolland et al.2011	+	?	+	+	+	+	+
Chee et al.2003	?	?	?	?	+	+	?
Dawson et al.2000	+	+	+	+	+	?	+
Grados et al.2003	?	?	+	+	+	+	+
Jackson et al.2006	+	?	+	+	+	+	?
Karkkainen et al.2010	+	+	-	-	-	+	+
Lau et al.2002	?	?	?	?	+	+	?
Moschonis et al.2006	+	?	?	?	+	+	+
Moschonis et al.2010	+	?	?	?	+	+	+
Moschonis et al.2011	?	?	?	?	-	+	?
Porthouse et al.2005	+	?	-	-	+	+	+
Salovaara et al.2010	+	+	-	-	+	+	+
Sullivan et al.2017	+	?	?	?	+	+	+

Fig. S3 Risk of bias summary: review authors' judgements about each risk of bias item for each included study.

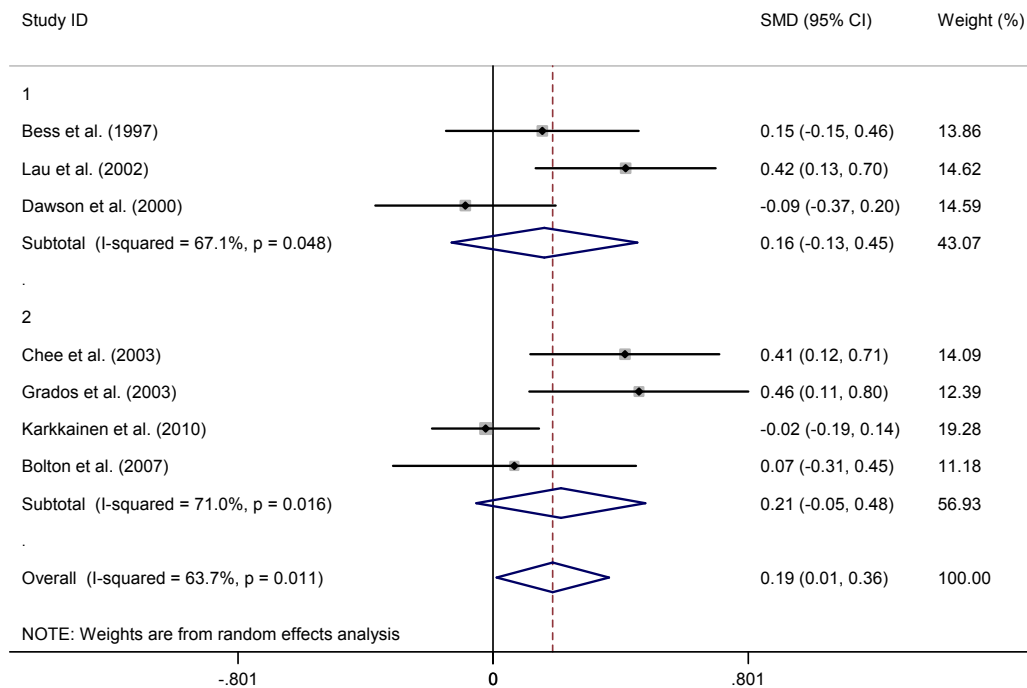


Fig. S4 Subgroup analysis of the effect of vitamin D combined with calcium on the femoral neck BMD change

The “1” means the calcium intake is no more than 1000 mg/d; the “2” means the calcium intake is more than 1000 mg/d.

Fig. S5-8 was the figures of sensitivity analysis.

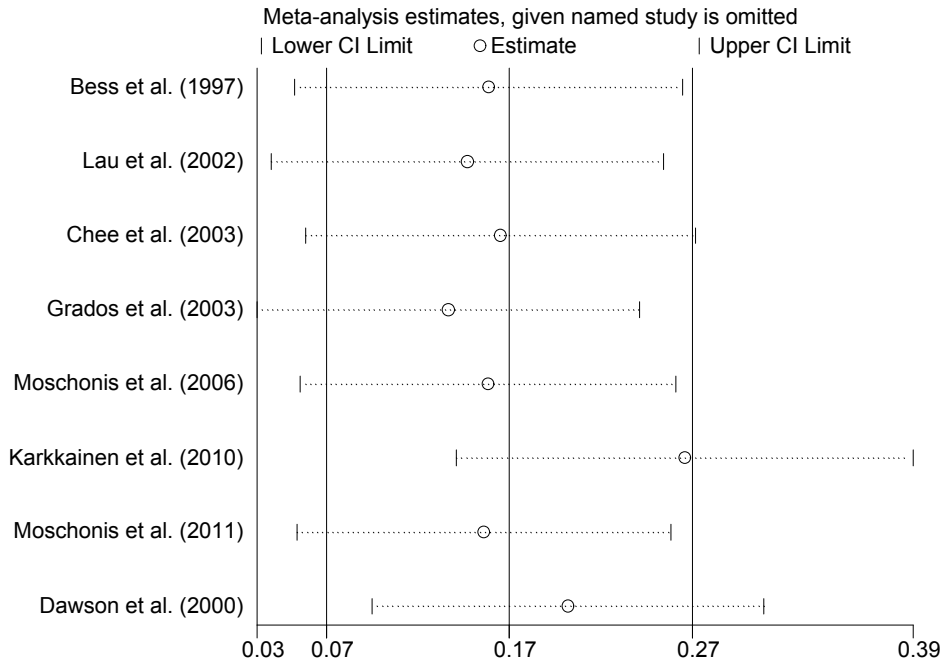


Fig. S5 Sensitivity analysis for combined calcium and vitamin D on lumbar spine BMD

Abbreviations: BMD, bone mineral density.

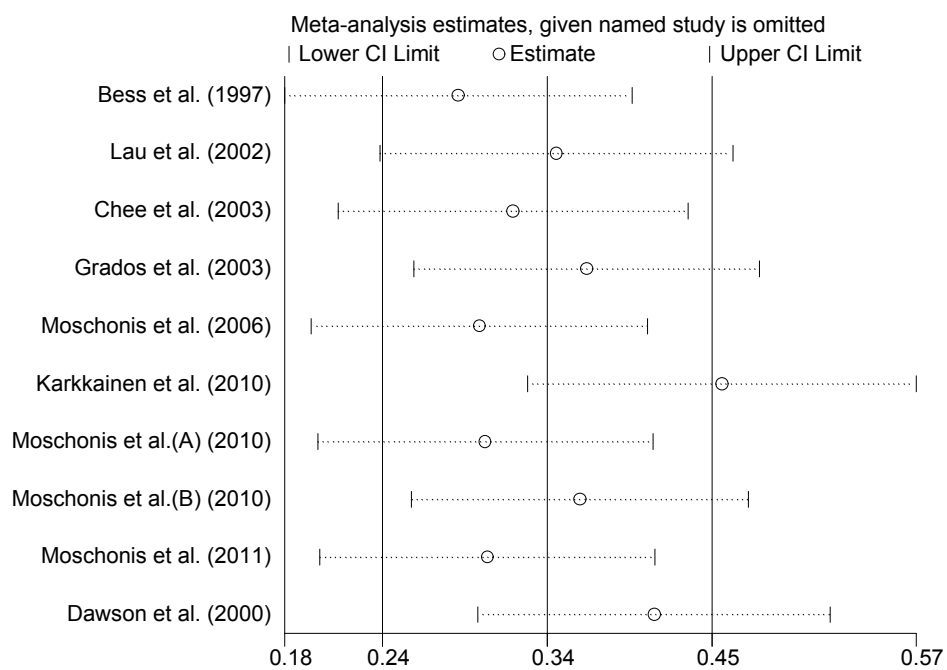


Fig. S6 Sensitivity analysis for combined calcium and vitamin D on total body BMD

Abbreviations: BMD, bone mineral density.

The A means the first 12 months of the study. The B means 12-30 months of the study.

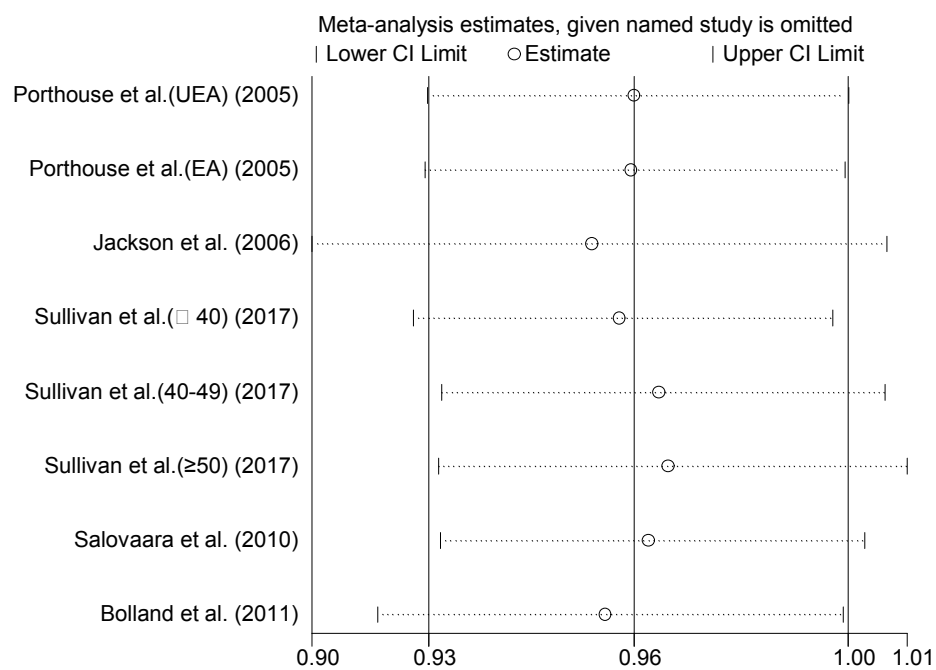


Fig. S7 Sensitivity analysis for combined calcium and vitamin D on total fracture

(<40) means the age of menopause is less than 40. (40-49) means the age of menopause is between 40 and 49. (≥50) means the age of menopause is equal or greater than 50. UEA means unequally allocated group. EA means equally allocated group.

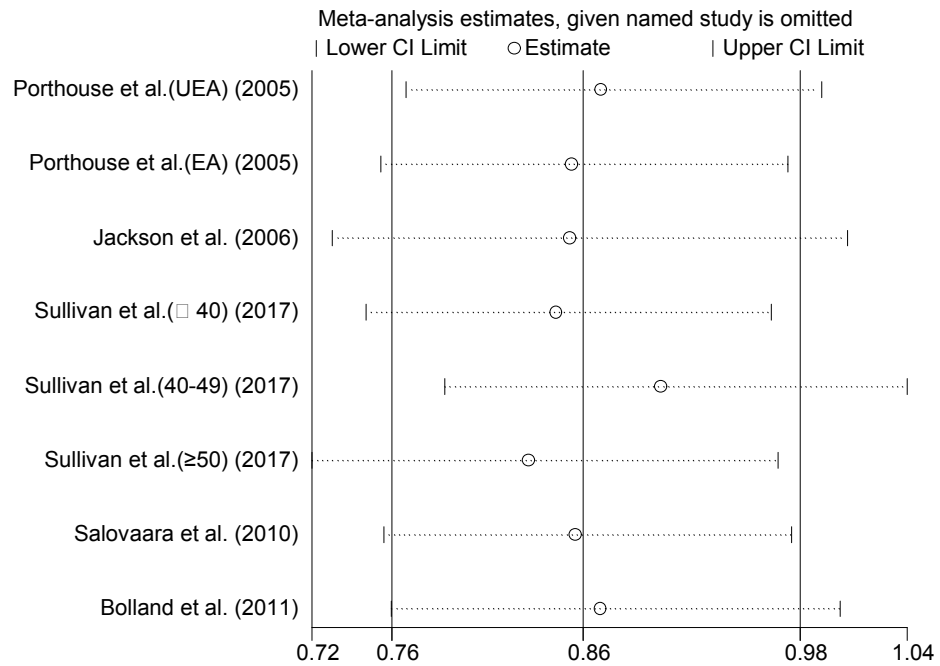


Fig. S8 Sensitivity analysis for combined calcium and vitamin D on hip fracture

(<40) means the age of menopause is less than 40. (40-49) means the age of menopause is between 40 and 49. ( $\geq 50$ ) means the age of menopause is equal or greater than 50. UEA means unequally allocated group. EA means equally allocated group.



Fig. S9-13 was the funnel plots that evaluated by Begg's test.

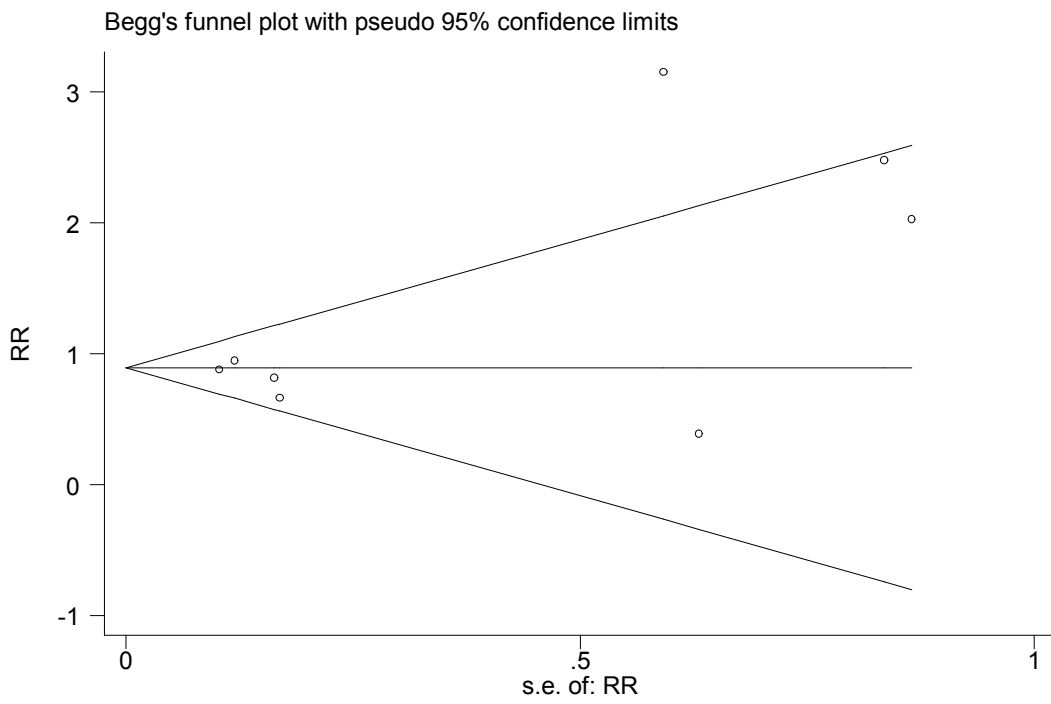


Fig. S9 Funnel plot for combined calcium and vitamin D on hip fracture

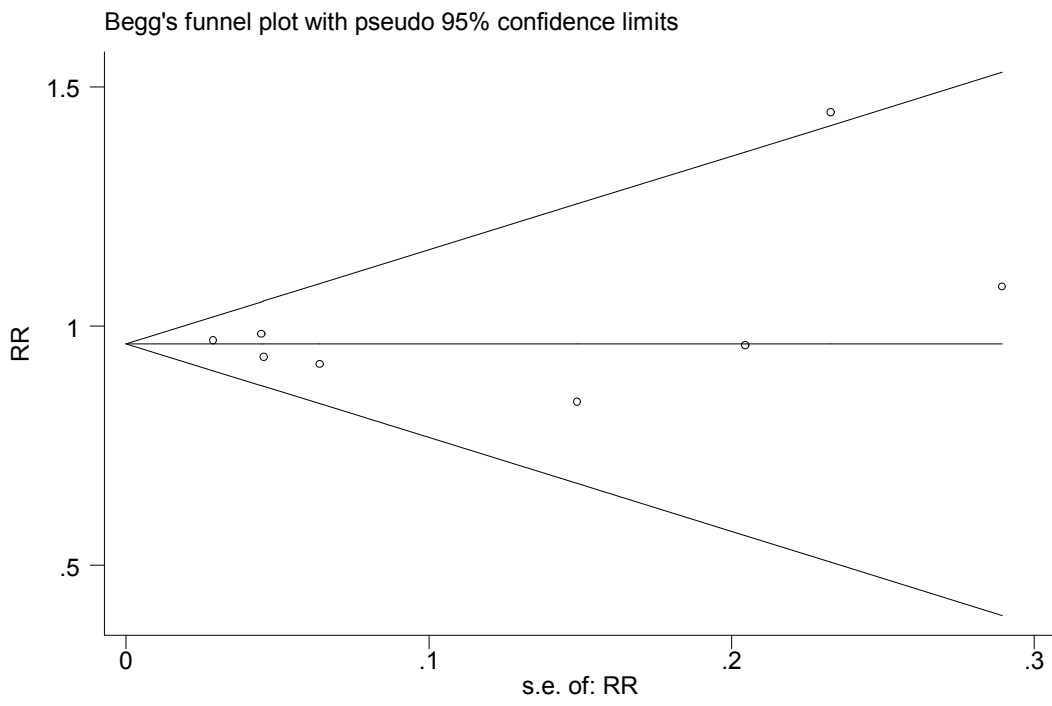


Fig. S10 Funnel plot for combined calcium and vitamin D on total fracture

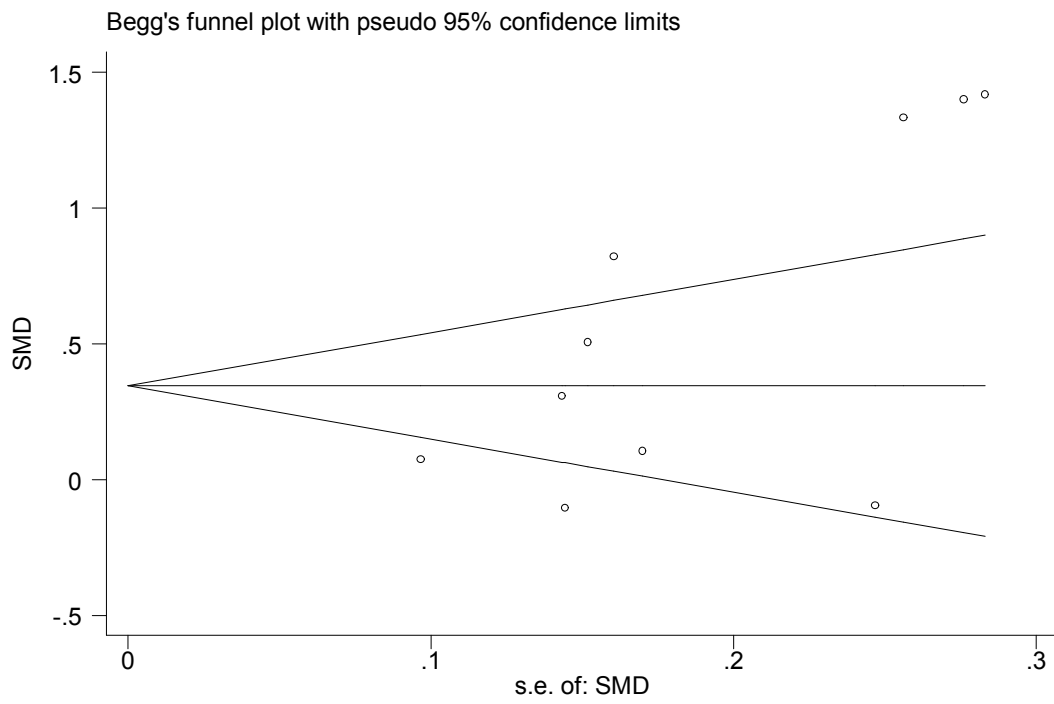


Fig. S11 Funnel plot for combined calcium and vitamin D on total BMD

Abbreviations: BMD, bone mineral density.

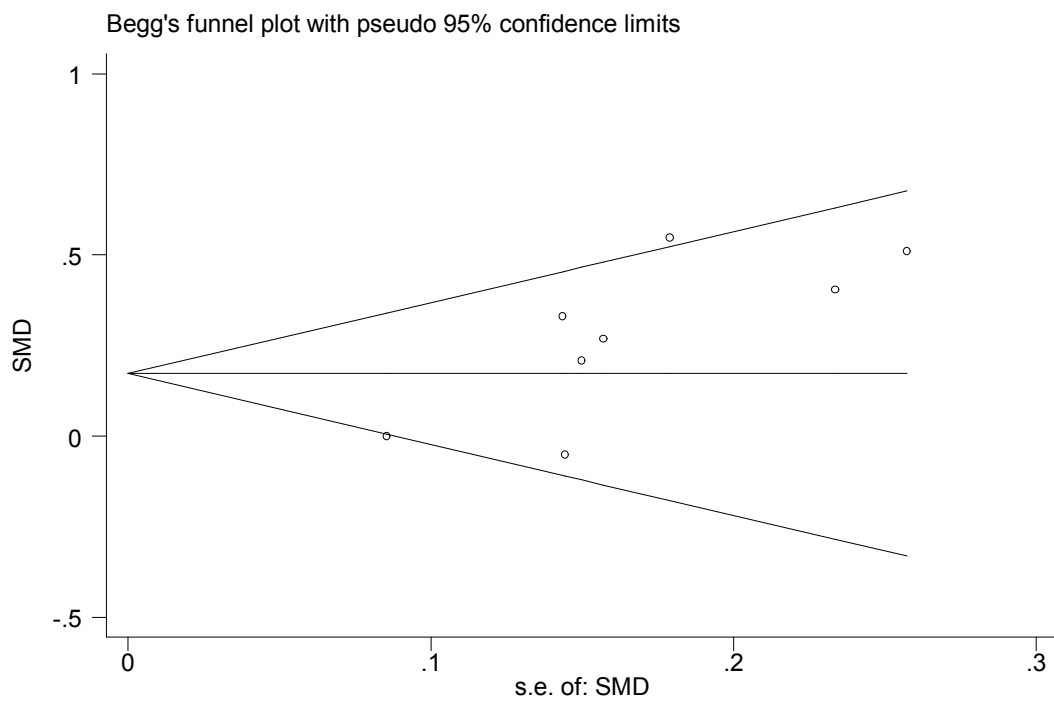


Fig. S12 Funnel plot for combined calcium and vitamin D on lumbar spine BMD

Abbreviations: BMD, bone mineral density.

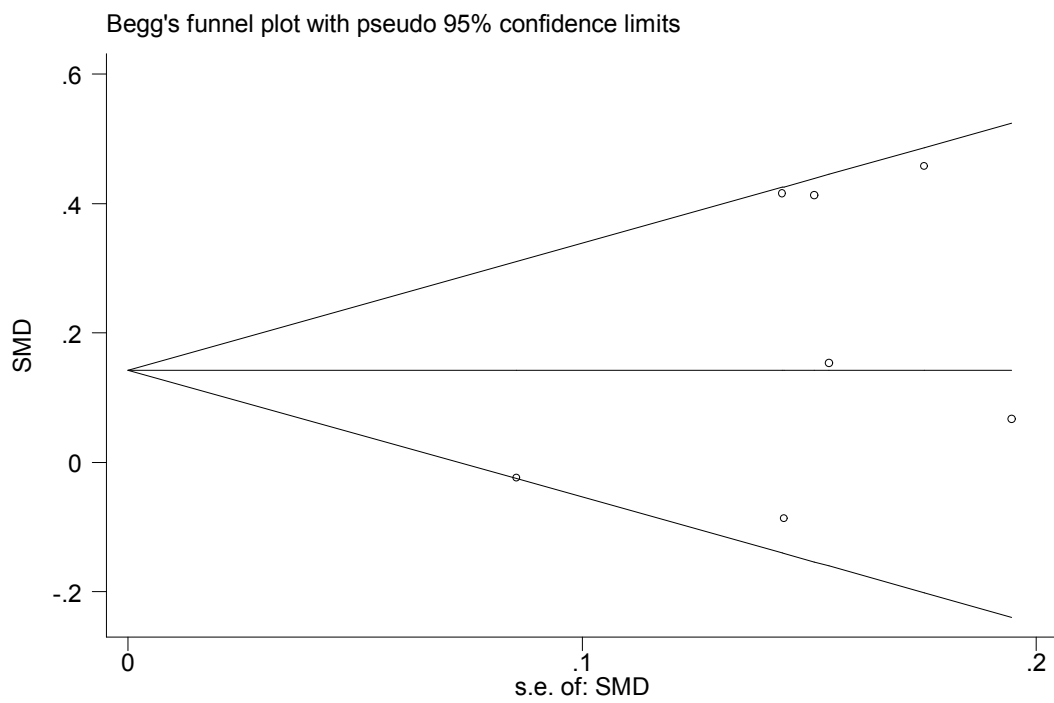


Fig. S13 Funnel plot for combined calcium and vitamin D on femoral neck BMD

Abbreviations: BMD, bone mineral density.