**Supplementary figure**

**Fig.S1** Forest plot of β-carotene intake and risk of hip fractures under the traditional meta-analysis approach.



**Fig.S2** Forest plot of the association between β-carotene intake and risk of fracture under the traditional meta-analysis approach, stratified analysis by geographic region.

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**Fig.S3** Forest plot of observational studies examining the association between β-carotene intake and risk of fractures utilizing the traditional meta-analysis approach, stratified by sex.

