Association of statin use in older people primary prevention group with risk of cardiovascular events and mortality: a systematic review and meta-analysis of observational studies

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Background: Current evidence from randomized controlled trials on statins for primary prevention of cardiovascular disease (CVD) in older people, especially those aged >75 years, is still lacking.

Purpose: We conducted a systematic review and meta-analysis of observational studies to extend the current evidence about association of statin use in older people primary prevention group with risk of CVD and mortality.

Methods: PubMed, Scopus, and Embase were searched from inception until March 18, 2021. We included observational studies (cohort or nested case-control) that compared statin use vs non-use for primary prevention of CVD in older people aged ≥65 years; provided that each of them reported the risk estimate on at least one of the following primary outcomes: all cause-mortality, CVD death, myocardial infarction (MI), and stroke. Risk estimates of each relevant outcome were pooled as a hazard ratio (HR) with a 95% confidence interval (CI) using the random-effects meta-analysis model.

Results: Ten observational studies (9 cohort and one case-control study; n=872,845) fulfilled our criteria. The overall combined estimate suggested that statin therapy was associated with a significantly lower risk of all-cause mortality (HR: 0.86 [95% CI: 0.79 to 0.93]), CVD death (HR: 0.80 [95% CI: 0.78 to 0.81]), and stroke (HR: 0.85 [95% CI: 0.76 to 0.94]) and a non-significant association with risk of MI (HR: 0.74 [95% CI: 0.53 to 1.02]). The beneficial association of statins with the risk of all-cause mortality remained significant even at higher ages (>75 years old; HR: 0.88 [95% CI: 0.81 to 0.96]) and in both men (HR: 0.75 [95% CI: 0.74 to 0.76]) and women (HR: 0.85 [95% CI: 0.72 to 0.99]). However, this association with the risk of all-cause mortality remained significant only in those with DM (HR: 0.82 [95% CI: 0.68 to 0.98]) but not in those without DM.

Conclusions: Statin therapy in older people (aged ≥65 years) without CVD was associated with a 14%, 20% and 15% lower risk of all-cause mortality, CVD death and stroke, respectively. The beneficial association with the risk of all-cause mortality remained significant even at higher ages (>75 years old), in both men and women, and in individuals with DM, but not in those without DM. These observational findings support the need for trials to test benefits of statins in those above 75 years of age.

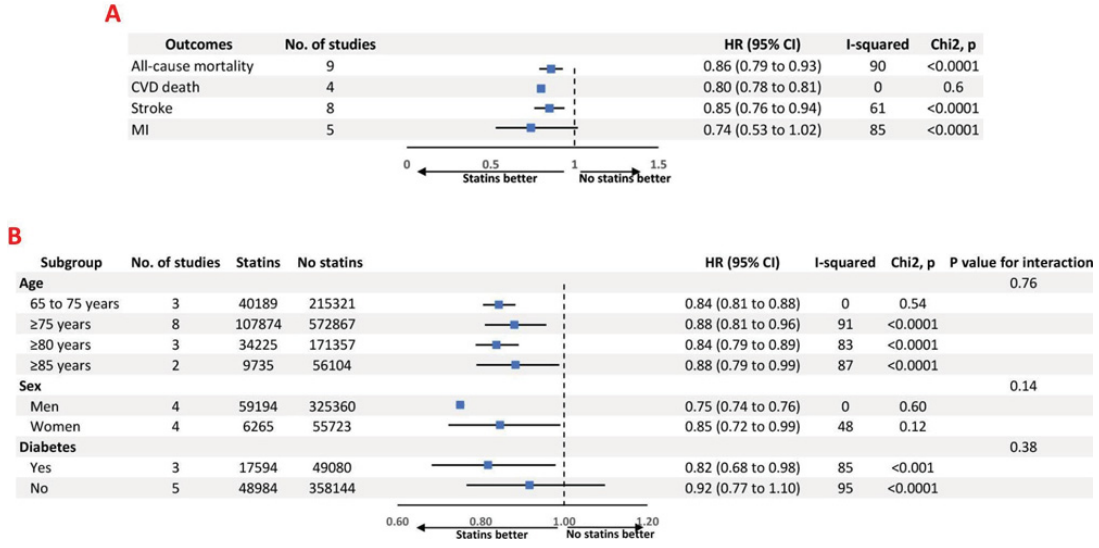

Figure 1. Results of the meta-analysis