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The effect of statins on all-cause and cardiovascular mortality in patients with non-dialysis chronic kidney disease, patients on dialysis, and kidney transplanted recipients: an umbrella review of meta-analyses

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Objectives: Although some previous meta-analyses have demonstrated a relationship between statin therapy and all-cause mortality in patients with chronic kidney disease (CKD), conflicting results have been reported. Thus, we performed an umbrella review to understand the strength of evidence and validity of the claimed associations between statin use and all cause and cardiovascular mortality in CKD patients, including patients on dialysis (CKD stage 5D) and transplant recipients.

Methods: We comprehensively re-analyzed the data of 14 meta-analyses of observational studies and randomized controlled trials on associations between statin use and different CKD groups – CKD, CKD stage 5D, and kidney transplant recipients. We also assessed the strength of evidence of the re-analyzed outcomes, which were determined from the criteria, including the statistical significance of the p-value of random-effects, as well as fixed-effects meta-analyses, small-study effects, between-study heterogeneity, and a 95% prediction interval.

Results: For CKD patients, statin use showed suggestive evidence for an association with reduced all-cause mortality [relative risk (RR) 0.77, 95% confidence interval (0.69-0.87)]. For kidney transplant recipients, statin use showed suggestive evidence for an association with reduced cardiovascular mortality [RR 0.67, 95% CI (0.50-0.90)]. However, for patients on dialysis, statins showed neither cardiovascular [RR 0.93, 95% CI (0.86-1.01)] nor all-cause mortality [RR 0.98, 95% CI (0.89-1.08)] benefits.

Conclusions: Our finding indicates that statin could improve all-cause and cardiovascular mortality in patients with non-dialysis CKD.

Figure 1. Effects of statin therapy in CKD patients(all-cause mortality)

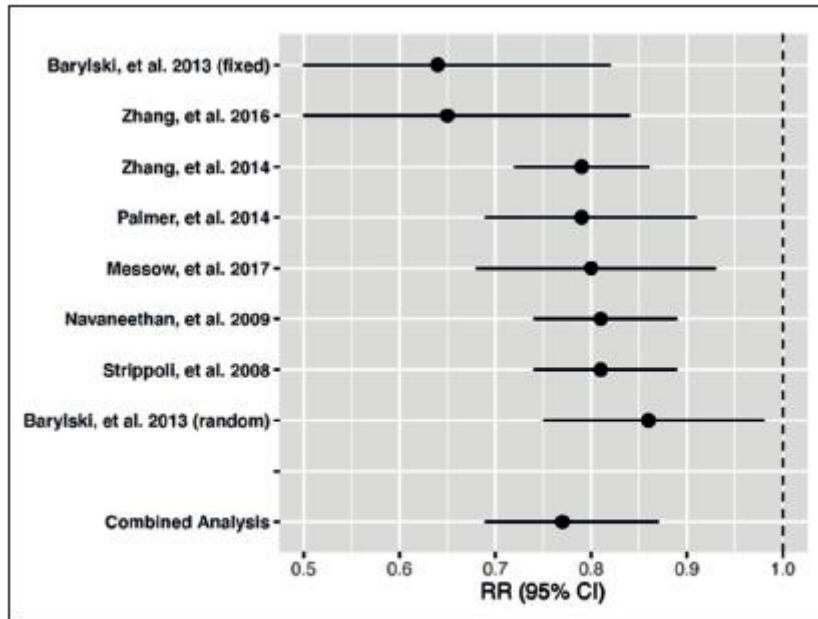


Figure 1. Effects of statin therapy in CKD patients (all-cause mortality).

Figure 2. Effects of statin therapy in CKD patients (cardio-vascular mortality)

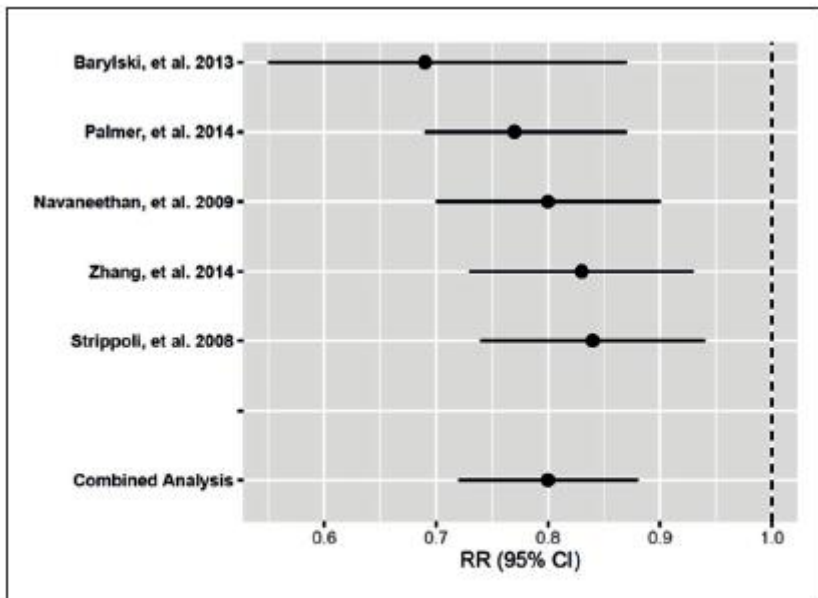


Figure 2. Effects of statin therapy in CKD patients (cardio-vascular mortality).