

Diabetes is Associated with Increased Risk for In-hospital Mortality in Patients with COVID-19: A Systematic Review and Meta-analysis Comprising 18,506 patients

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Background

- Diabetes Mellitus is one of the leading causes of morbidity and mortality in the world.
- In the United States alone, more than 34 million adults had known or undiagnosed diabetes in 2018.
- Infectious diseases are more frequent and can be associated with worse outcomes in patients with diabetes.
- We aimed to systematically review and synthesize with a meta-analysis the available observational studies reporting the effect of diabetes in mortality among hospitalized patients with COVID-19.

Methods

- This study was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)
- Medline, Embase, Google Scholar, and medRxiv databases were reviewed for identification of eligible studies.
- A random-effect model meta-analysis was used and I-square was utilized to assess the heterogeneity.
- In-hospital mortality was defined as the endpoint.
- Sensitivity, subgroup, and meta-regression analyses were performed.

Results

- Out of 1,721 studies screened from the literature and on-line sources, 14 observational studies (12 retrospective and 2 prospective) met the prespecified criteria for inclusion in the analysis
- Five studies were conducted in Asia, five in the United States and four in Europe.
- 18,506 patients were included in this meta-analysis (3,713 diabetics and 14,793 non-diabetics).
- Patients with diabetes were associated with a higher risk of death compared to patients without diabetes (OR: 1.65; 95% CI: 1.35–1.96; I² 77.4%; Figure 1).
- Subgroup analysis showed similar results, including the studies from the US alone (Figure 2).
- Heterogeneity was high.
- A study level meta-regression analysis was performed for all the important covariates and no significant interactions were found between the covariates and the outcome of mortality.

Figure 1

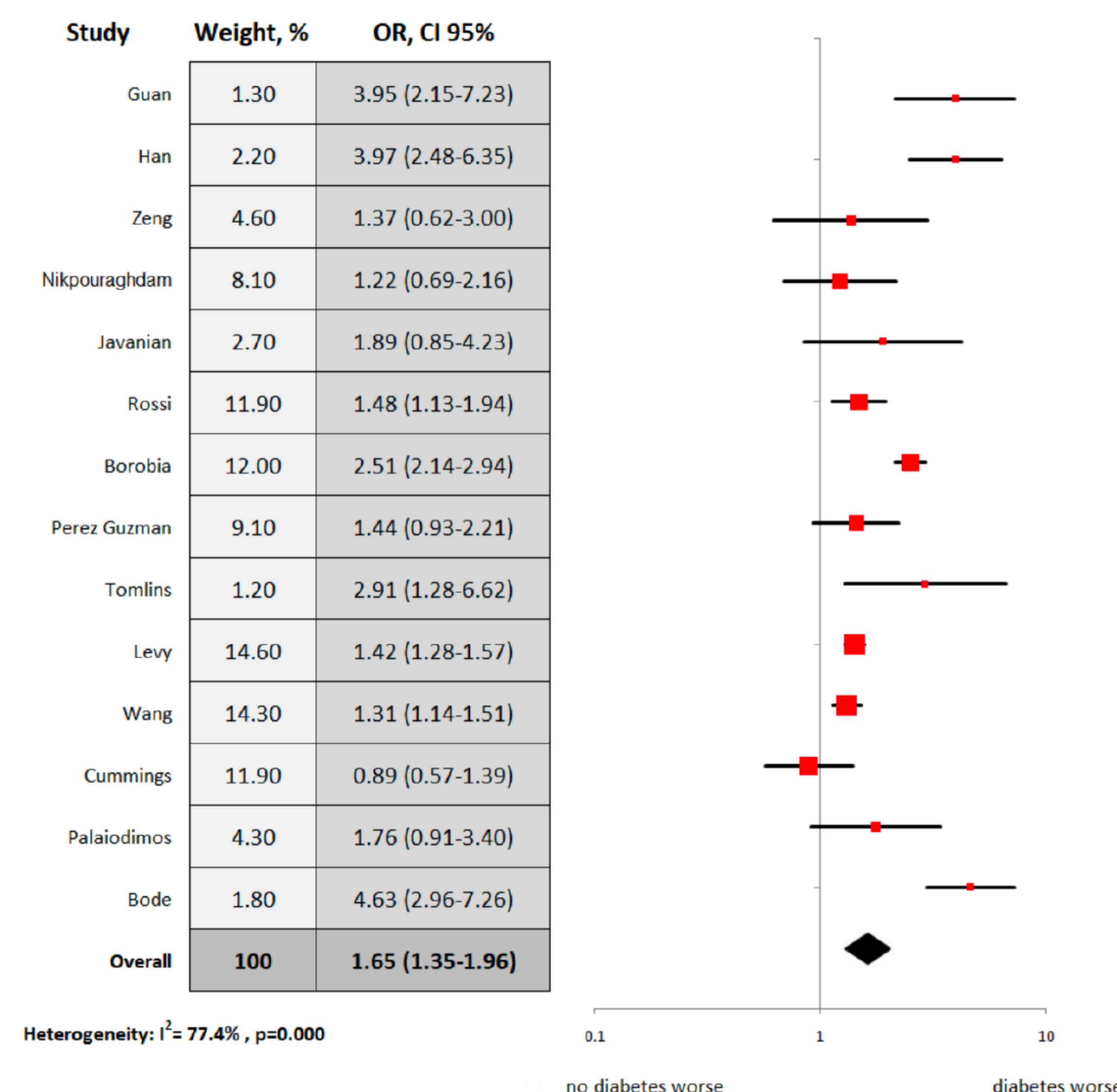
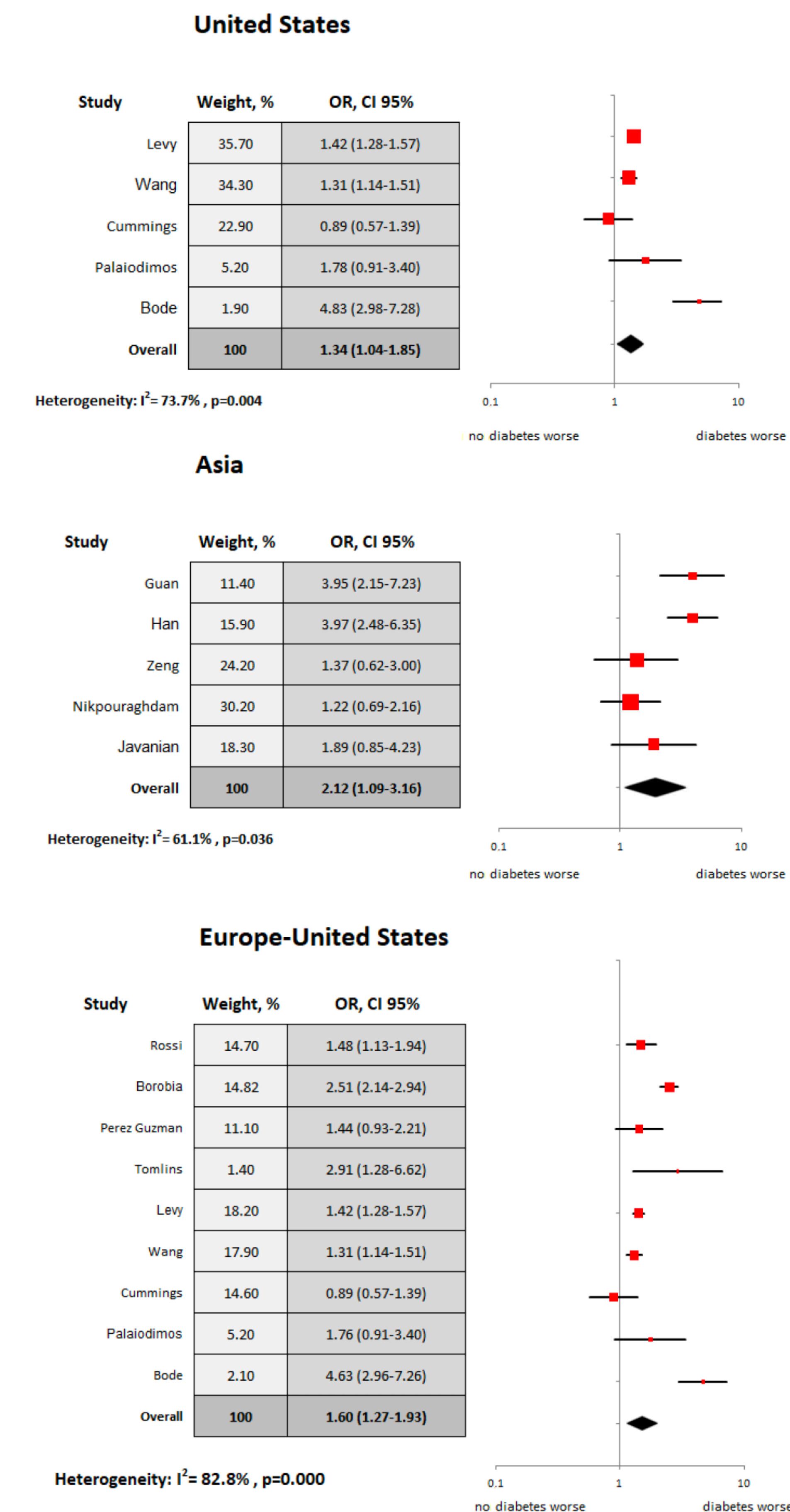


Figure 2



Conclusions

- The likelihood of death is 65% higher in diabetic hospitalized patients with COVID-19 compared to non-diabetics.
- Attention should be paid in protecting this population from COVID-19 given the higher chance for adverse outcomes