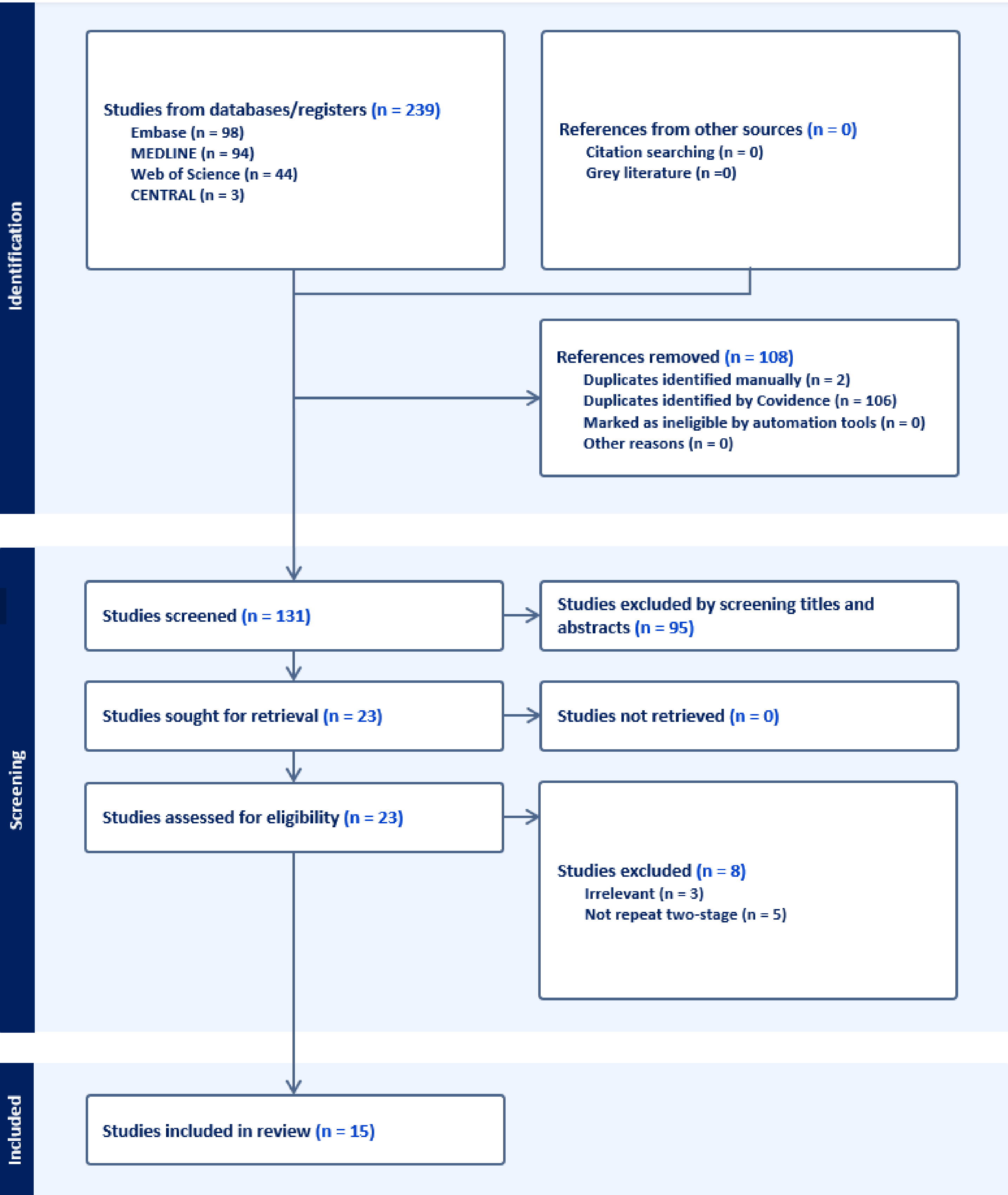


Introduction

- Repeat two-stage exchange is an established treatment option for persistent or recurrent periprosthetic joint infection (PJI) following initial two-stage revision of total hip or knee arthroplasty.
- However, outcomes following repeat two-stage exchange remain poorly defines.
- Aim:** To quantify pooled re-infection and all-cause mortality rates following repeat two-stage exchange for chronic PJI.

Methods

- Included studies reported reinfection after THA or TKA in patients who completed both stages of a repeat two-stage exchange arthroplasty.
- Exclusion criteria included case reports, review articles, studies evaluating the first two-stage exchange, and patients who did not complete both stages of repeat exchange.
- A total of **239** studies were identified; 15 were included for reinfection analysis and 6 for mortality analysis.
- Pooled events per person-years analyses were performed to estimate reinfection and mortality rates while accounting for follow-up duration.
- Meta-analyses were conducted using a random-effects model, and heterogeneity was assessed with the I2 statistic.
- Statistical significance was defined as $p < 0.05$.



Results

- Fifteen studies comprising 591 repeat two-stage exchanges for hip or knee periprosthetic joint infection (PJI) were included, with a mean follow-up of 5 years. The pooled re-infection rate was 10 per 100 person-years ($I^2 = 89\%$).
- On subgroup analysis, TKA was associated with a higher re-infection rate than THA (18 vs. 6 per 100 person-years; $I^2 = 95\%$ and 74% , respectively).
- Six studies comprising 186 cases reported mortality outcomes. The pooled all-cause mortality rate was 3 per 100 person-years ($I^2 = 37\%$) over a mean follow-up of 3 years.

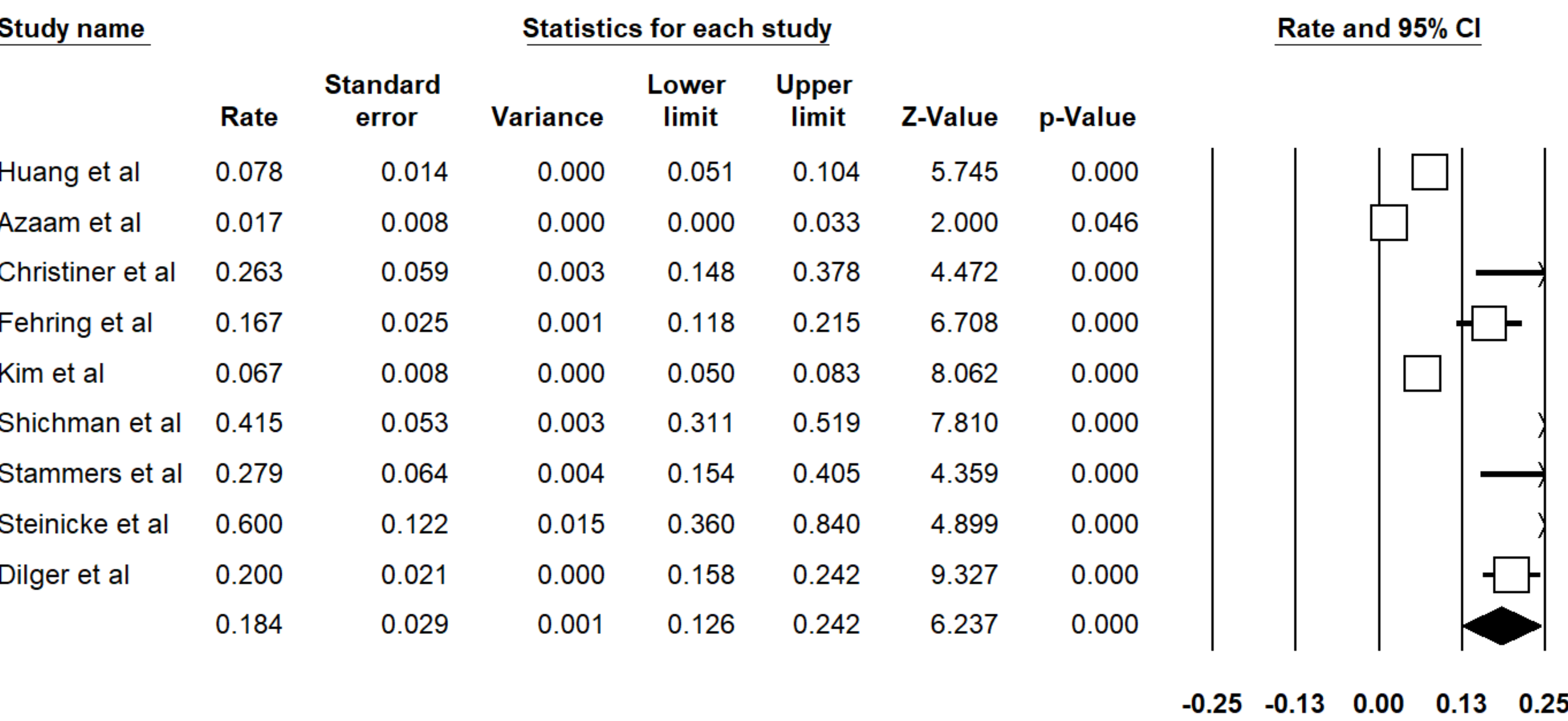


Figure 1. Pooled re-infection rate for repeat two-stage exchange for knee PJI

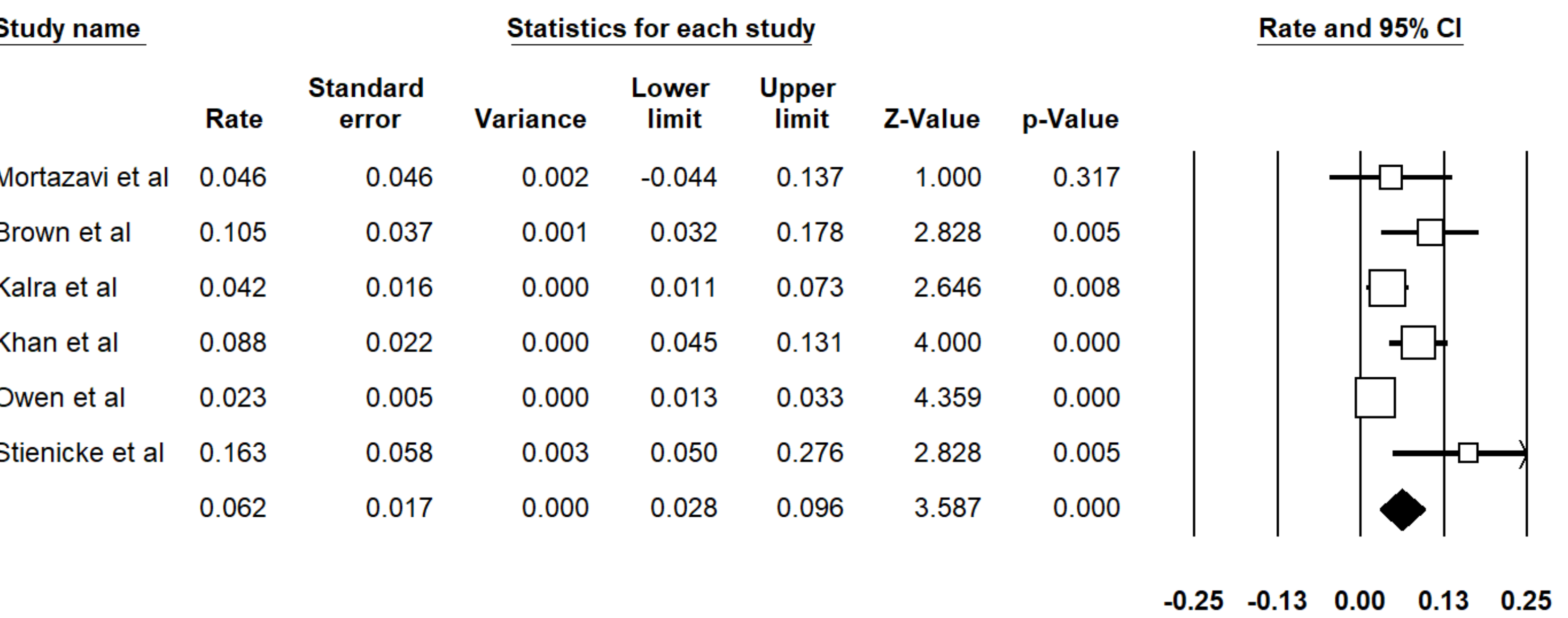


Figure 2. Pooled re-infection rate for repeat two-stage exchange for hip PJI

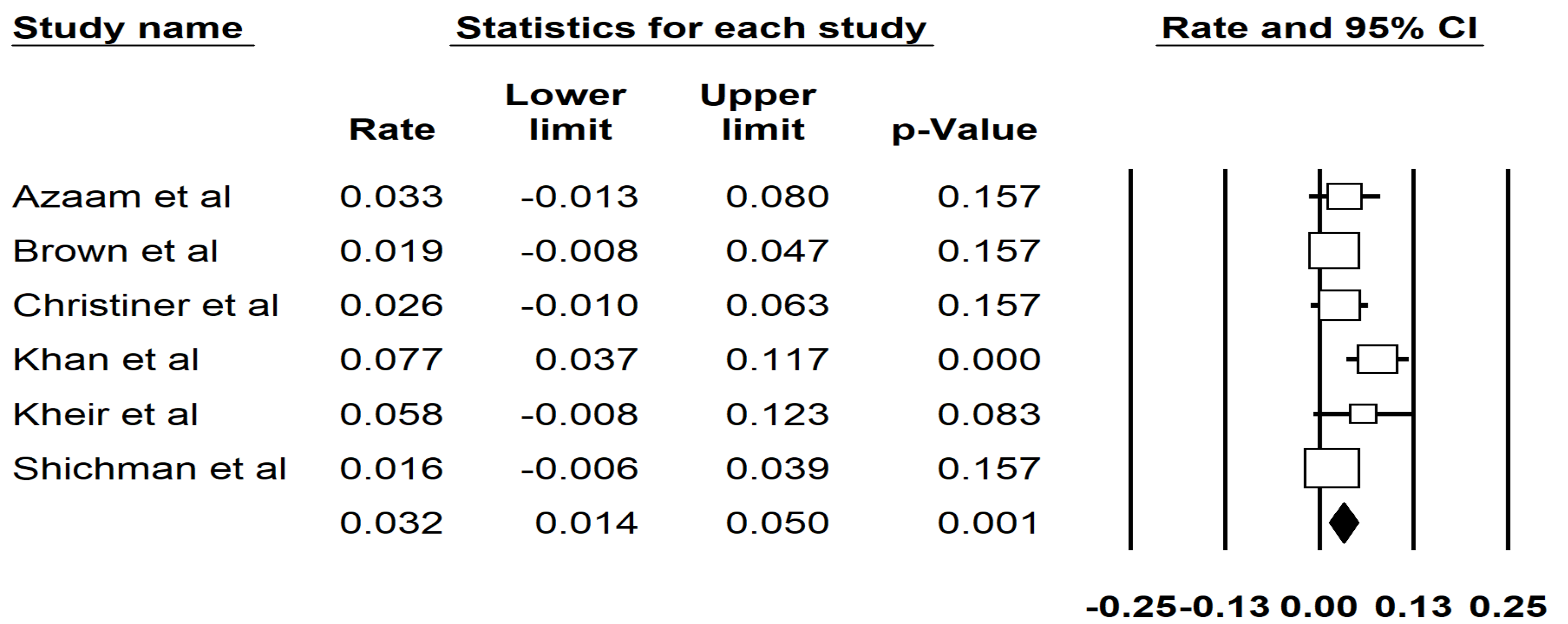


Figure 3. Pooled mortality rate for repeat two-stage exchange for hip and knee PJI

Conclusion

- Repeat two-stage exchange for chronic PJI is associated with substantial risk of re-infection and mortality, with TKA: ~18% re-infection per year and THA: ~6% re-infection per year and mortality: ~15% at 5 years.
- These findings underscore the high-risk nature of repeat two-stage exchange and can help guide realistic patient–surgeon discussions when considering treatment options for persistent or recurrent PJI.