

The Prognostic Impact of Depression or Depressive Symptoms on Patients with Head and Neck Cancer: A Systematic Review and Meta-analysis.

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Introduction

There is mounting evidence to support the prognostic effect of depression in head and neck cancer (HNC). Investigating the link between depression and HNC is important, as depression may be a preventable or modifiable prognostic factor in survival. To our knowledge, the evidence in the literature has not yet been synthesized through quantitative methodology using meta-analytic techniques. This meta-analysis sought to assess if the literature supported the hypothesis that pretreatment depression or depressive symptoms would affect survival outcomes in HNC.

Methods

EMBASE, Scopus, Medline, and the Cochrane Library were used to identify studies in March 2019. Articles that reported prognostic impact of depression or depressive symptoms in HNC and hazard ratio (HR) for overall survival (OS), DSS, with or without disease-free survival (DFS), with or without progression-free survival (PFS), or Kaplan Meier curve available were included. Forest plots were constructed for all outcomes displaying the random-effects model of the summary-effect measure and 95% CI. Heterogeneity was assessed using Higgins's I^2 . $I^2 > 50\%$ was considered as a marker of significant heterogeneity. To assess publication bias, Begg's Funnel Plot and Egger's bias indicator tests were used. The Quality in Prognosis Studies (QUIPS) tool was used to analyze within-study bias. OS was the primary endpoint. RevMan 5.3 and Meta Essentials were used for statistical analysis.

Results

7 studies (8 cohorts) from year 2005 to year 2018, with a total of 1,743 patients, were included in the final analysis. The sample sizes ranged from 79 to 384 patients. 4 studies were from the United States, 1 from Korea, 1 from Norway, and 1 from the Netherlands.

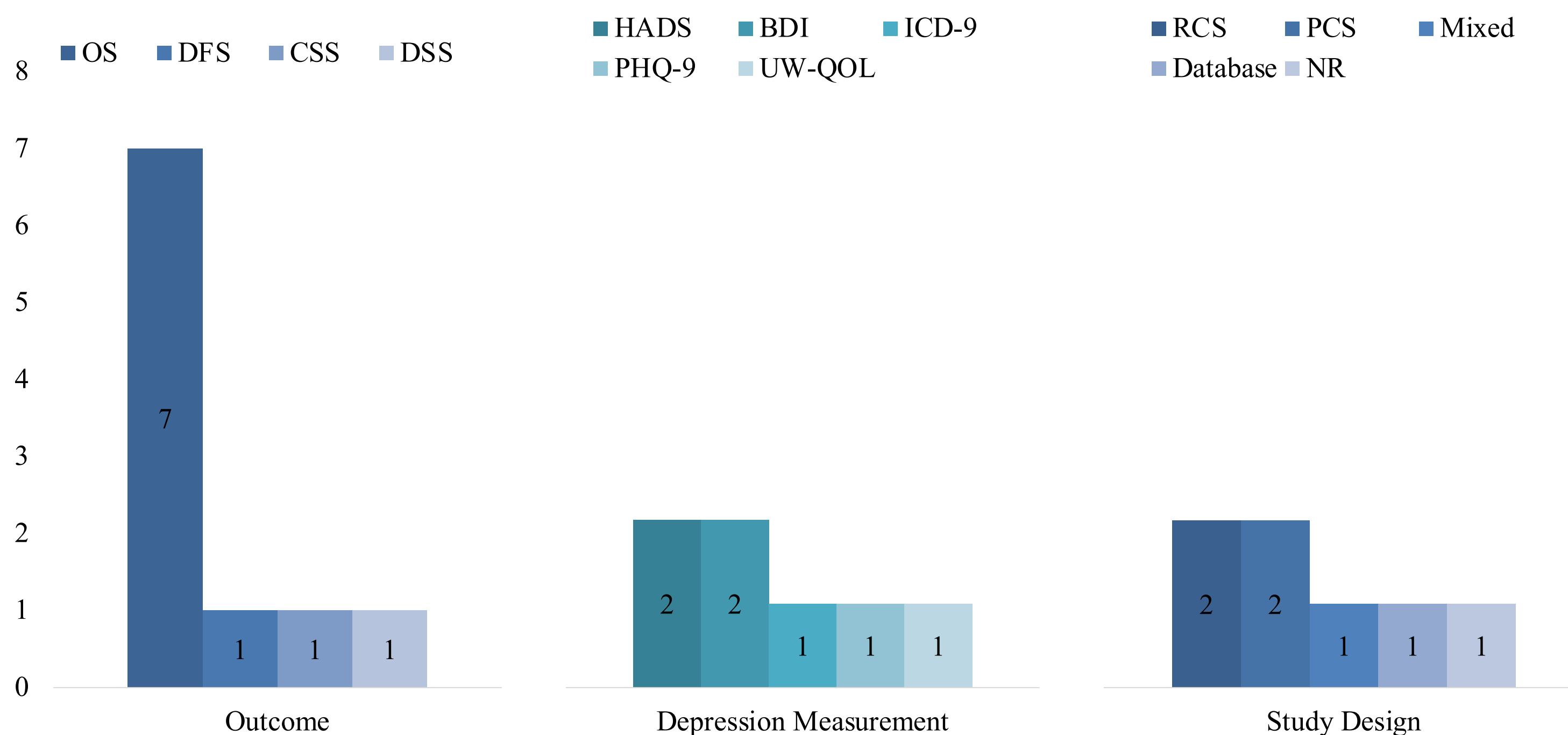


Figure 1. Study Characteristics

DFS = disease-free survival; CSS = cancer-specific survival; DSS = disease-specific survival; HADS = Hospital Anxiety and Depression Scale; BDI = Beck Depression Inventory; PHQ-9 = Physician Health Questionnaire; UW-QOL = University of Washington Quality of Life Questionnaire; RCS = retrospective cohort study; PCS = prospective cohort study; NR = not reported.

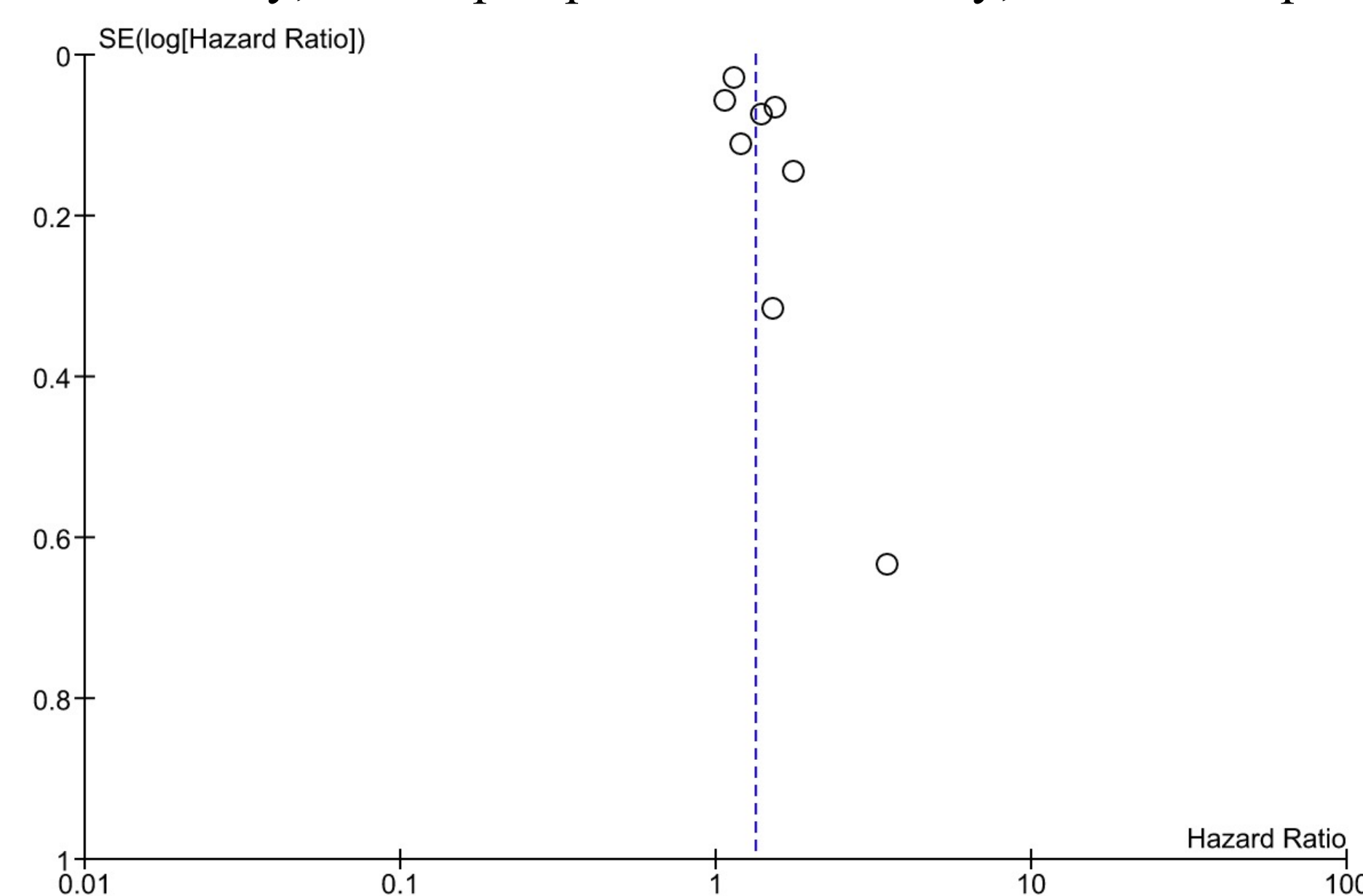


Figure 2. Funnel plot of the studies included in this meta-analysis.

Begg's funnel plot for HR of OS was overall symmetric. Therefore, it suggested that there was not publication bias. This was confirmed with the p value for Egger's regression ($p = .092$).

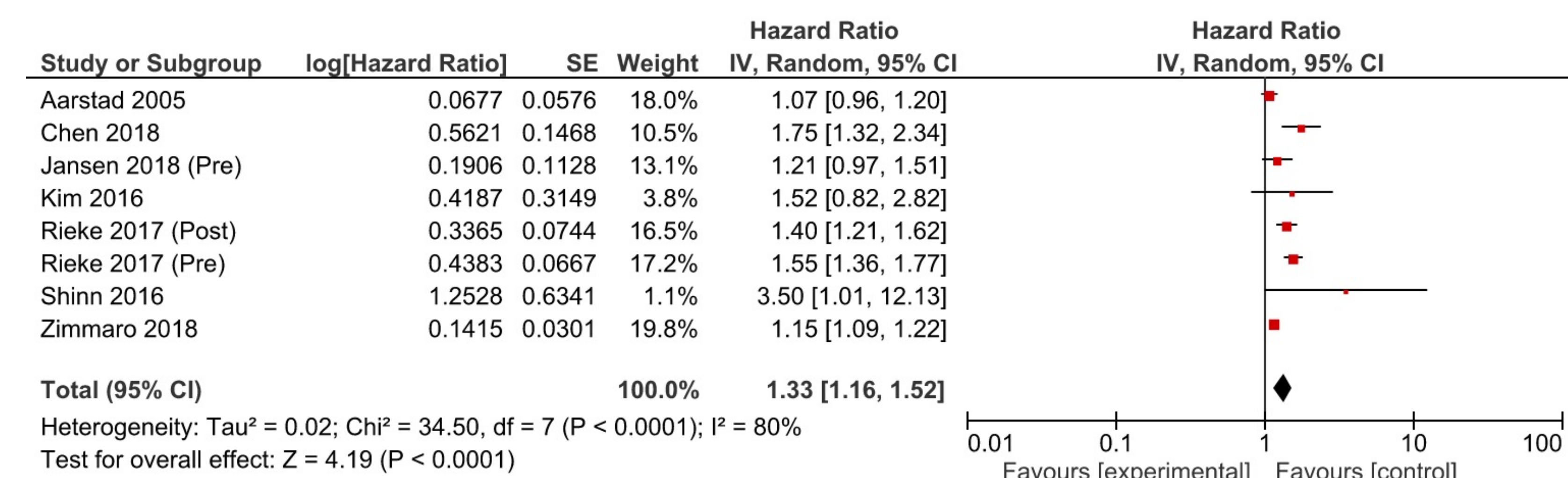


Figure 3. Forest plot meta-analysis of the association between depression and OS in HNC. Each study is listed by last name of first author and the HR with a 95% CI.

*Reike et al. was stratified into two studies due to the paper reporting results for two cohorts, one with patients who had depression prior to cancer diagnosis and one with patients who developed depression following cancer diagnosis.

The pooled data demonstrated that depression or depressive symptoms were associated with OS with a HR of 1.33 (95% CI: 1.16-1.52; $P < 0.0001$). The test for heterogeneity showed an I^2 value of 80%, $P < 0.001$. This was confirmed with the random effects model.

Conclusions

This meta-analysis observed that pretreatment depression or depressive symptoms predict worse overall survival in patients diagnosed with HNC. The pooled analysis demonstrated a statistically significant effect.

Future Work

Further research is necessary to determine the impact of treatment of depression on OS in HNC as well as to determine the optimal instrument to measure depression in patients with HNC.