

Prevalence of diabetic macular edema diagnosed with optical coherence tomography in patients with diabetes: a systematic review and meta-analysis



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Purpose

Diabetic macular edema (DME) is a leading cause of vision loss among working-age individuals with diabetes and a major public health concern (1). Compared with examinations of fundus photography, optical coherence tomography (OCT) technology allows for more accurate assessments of DME. Systematic reviews on the prevalence of DME diagnosed based on OCT are lacking. **Objectives:** Determine the prevalence of DME diagnosed based on OCT, among people with diabetes (PwD)

Methods

A systematic literature retrieval was conducted in five computer databases: MEDLINE (OVID), EMBASE (OVID), Web of Science, Scopus and CINAHL. Database searching occurred on May 29, 2020 and was updated on March 19, 2021. All English-language and population-based studies examining the prevalence of OCT-diagnosed DME among PwD were included.

A random-effects generalized linear mixed model with a logit link (i.e., random intercept logistic regression model) was used to pool the prevalence estimates. Subgroup analyses on the pooled prevalence of DME were performed by low- and middle-income countries (LMIC) and high-income countries (HIC), defined using criteria from the World Bank.

References

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- Wang YT, Tadarati M, Wolfson Y, Bressler SB, Bressler NM. Comparison of Prevalence of Diabetic Macular Edema Based on Monocular Fundus Photography vs Optical Coherence Tomography. *JAMA Ophthalmol*. 2016;134(2):222.

Methods cont'd

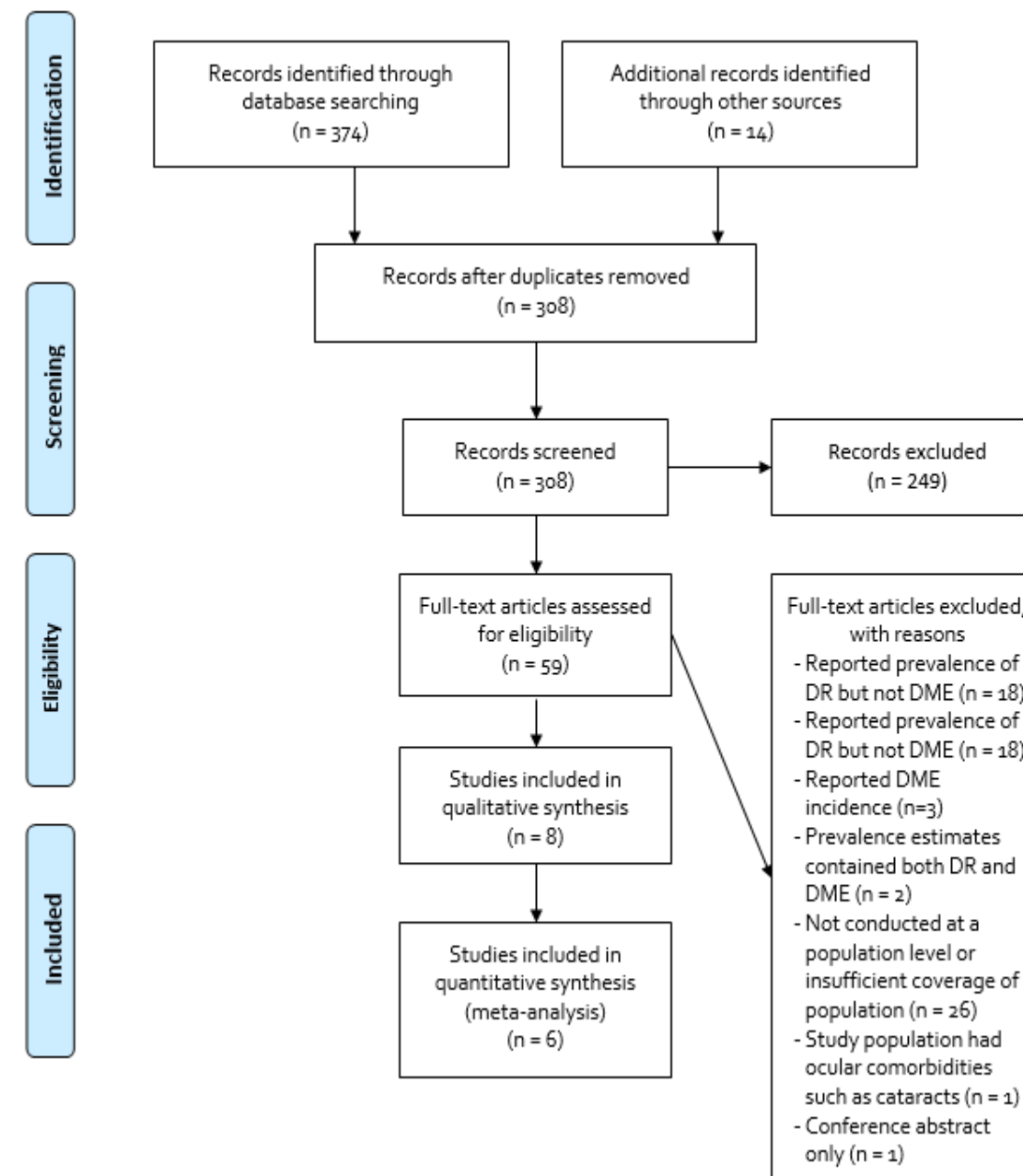


Figure 1. PRISMA diagram for the selection of studies and inclusion/exclusion processes

Results

Six studies were included in the meta-analysis, four from LMIC and two from HIC. The overall prevalence of DME based on OCT was 4.23% (95% CI: 2.27%-7.74%) globally (**Figure 2**). Among LMIC, the pooled prevalence was 3.37% (95% CI: 1.62%-6.87%) (**Figure 3**). Based on two individual studies from HIC, the pooled prevalence was 9.86% (95% CI: 8.50%-11.41%). In 2012, a meta-analysis reported that the prevalence of DME diagnosed with fundus photography was 6.81% (95 CI: 6.74%-6.89%) (2), which is 2.5% greater than the prevalence of OCT-diagnosed DME.

Results cont'd

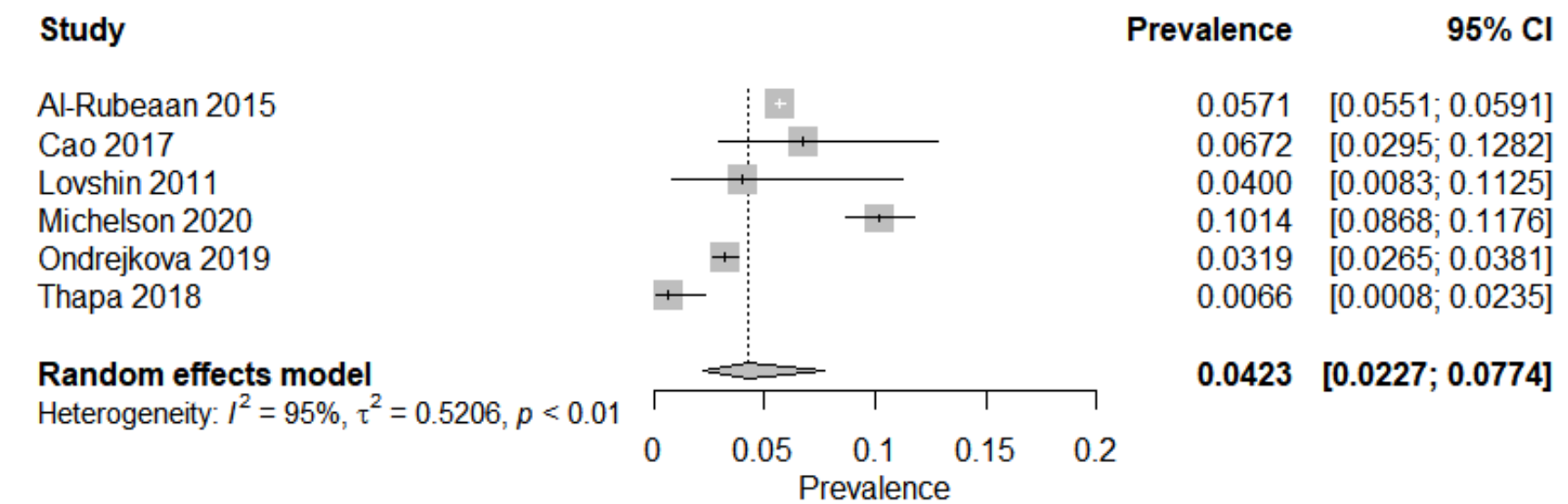


Figure 2. Forest plot of prevalence (%) of OCT-diagnosed DME

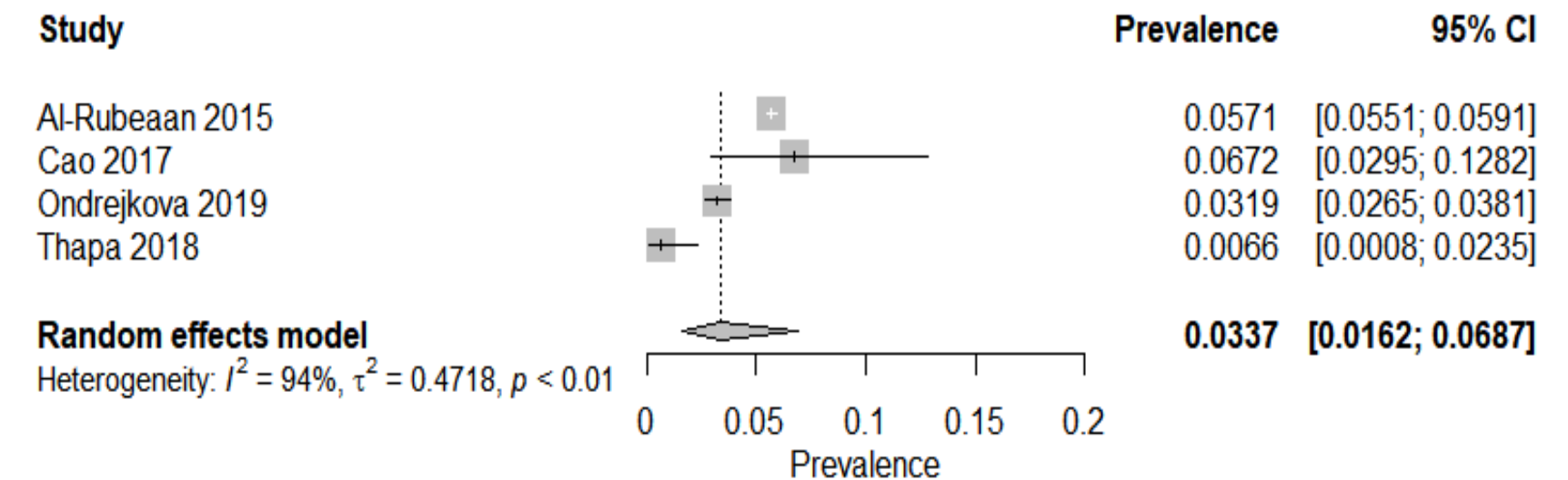


Figure 3. Forest plot of prevalence (%) of OCT-diagnosed DME in LMIC

Conclusion & Discussion

- The prevalence of OCT-diagnosed DME was 4.23%, which is approximately 2.5% less than the prevalence of DME diagnosed with fundus photography (2)
- The prevalence of DME was approximately 6.49% lower in LMIC than HIC
- Although fundus examination-based clinically significant macular edema (CSME), introduced by the Early Treatment Diabetic Retinopathy Study, remains a valuable diagnostic option for DME, CSME has been largely replaced by OCT-based center-involving macula edema, as an indication for treatment in the era of anti-vascular endothelial growth factor agents
- As OCT is a more accurate diagnostic modality, previous studies based on fundus photography may have overestimated the prevalence of DME (3)
- There is a need to inform physicians and educate PwD regarding early detection and treatment of DME using OCT, a widely considered gold standard for monitoring DME