

THE PREVALENCE OF MICROVASCULAR COMPLICATIONS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS IN CHINA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Objective

- To estimate the overall prevalence of microvascular complications of type 2 diabetes in mainland China, and to identify any associated risk factors

Background

- The International Diabetes Federation reported that Chinese adult diabetes patients (20-79 years old) have reached 116 million in 2019, making China the largest diabetic population in the world^[1]
- Diabetic microvascular complications mainly include **diabetic retinopathy (DR)**, **diabetic nephropathy (DN)** and **diabetic foot (DF)** caused by diabetic neuropathy, resulting in a high rate of fatality and disability in patients with T2DM
- A comprehensive understanding of the prevalence of diabetes complications is imperative to reducing the diabetes disease burden and to ensuring a rational allocation of public health resources

Results

- A total of 2,682 articles were retrieved with 171 included in the meta-analysis. Of which, 86 studies in DR, 61 in DN and 24 in DF, involving 807,313 T2DM patients.
- Results of the meta-analyses demonstrated that the prevalence of diabetic retinopathy was 26.19% [95% CI: 23.02%-29.50%], diabetic nephropathy 27.09% [95% CI: 23.55%-30.79%], and diabetic foot 7.41% [95% CI: 5.48%-10.03%], respectively (Figure 1).
- Results of the meta-regression analyses showed that the duration of diabetes was a risk factor for the prevalence of DR, DN and DF. The prevalence of all three complications demonstrated an upward trend with the increase of the duration of diabetes ($p < 0.05$) (Figure 2).

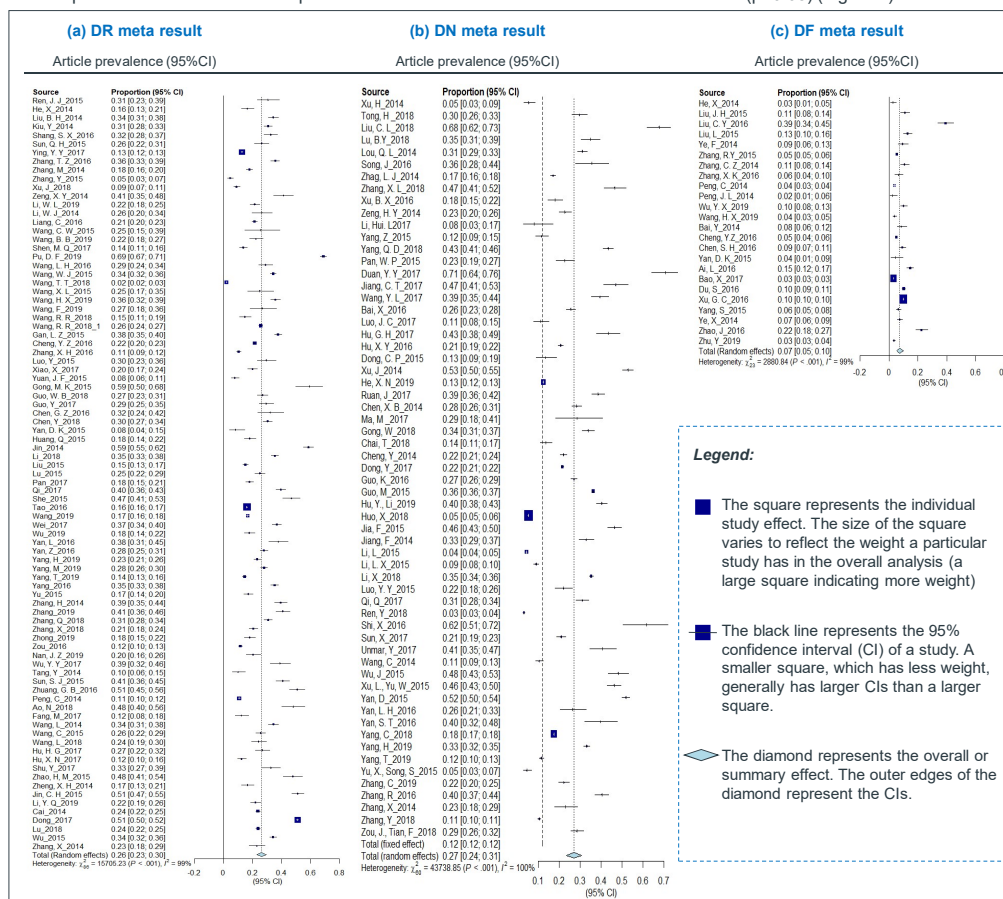


Figure 1 Meta-analysis Forest Plots

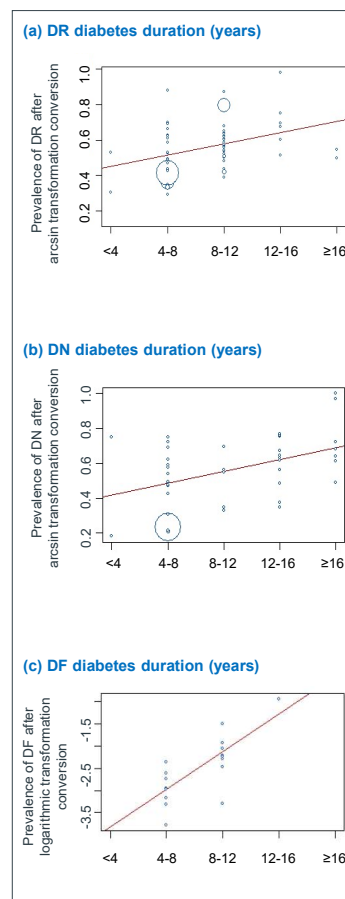


Figure 2 Meta-regression Analysis Bubble Charts

Discussion & Conclusion

Conclusion

The prevalences of DR, DN and DF in patients with T2DM are high in mainland China, leading to heavy disease burdens. Duration of diabetes is positively associated with diabetic microvascular complications. Anti-diabetic drugs with novel mechanisms are expected to be developed to restore glucose homeostasis so as to prevent and delay the onset of diabetic microvascular complications.

- The pathogenesis of diabetic microvascular complications has not yet been fully understood. Active control of blood glucose fluctuation, blood pressure and lipids is the basis for preventing and delaying the development of diabetic microvascular complications.
- Although there are many different classes of anti-diabetic medications available, there is still a lack of clinical evidence on the improvement of glycemic fluctuation.
- Drugs with novel mechanisms should be developed, such as glucokinase activators, which can restore the normal physiological regulation of glucose, maintain glucose homeostasis, target the underlying causes of diabetes, and thus to reduce and delay the onset and development of diabetic complications effectively.

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