Predicting factors of glaucoma in asymptomatic Chinese diabetic patients with incidental finding of increased cup-to-disc ratio in primary care setting in Kowloon East Cluster (KEC)

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Introduction
Glaucoma is a form of progressive optic neuropathy which can cause serious and irreversible visual loss. An abnormally high cup-to-disc ratio (CDR) is a common incidental finding during diabetic retinopathy assessment in the primary care clinics. It may signify glaucoma but can also be physiological. Patients with certain associated factors would be at higher risk of having glaucoma. Recognition of these factors would aid the identification of high risk patients and allow prompt referral to the ophthalmologists for early assessment.

Objectives
To evaluate the predicting factors of glaucoma in Chinese diabetic patients with incidental finding of high CDR in 4 general out-patient clinics (GOPC) in KEC.

Methodology
This was a case control study. Diabetes patients with increased CDR as detected by fundi photo during diabetic retinopathy assessment from 1 July 2010 to 30 June 2013 were included. Data were retrieved from diabetic complications assessment report, consultation notes of GOPC and Ophthalmology Specialist Out-patient Clinics (SOPC) and fundi photographic images. Statistical tests including paired t-test, Wilcoxon sign
rank test, McNemar’s test and conditional logistic regression were used for data analysis.

**Result**

155 cases and 155 controls were recruited. High CDR and family history of glaucoma were found to be strong associated factors predicting glaucoma. It was shown that for every 0.1 unit increase in CDR, the adjusted odd ratio for glaucoma is 2.86 (95%CI 1.82-4.52). For patients with positive family history of glaucoma, the adjusted odd ratio for glaucoma is 8.19 (95%CI 0.99–67.6). Other known risk factors of glaucoma including history of hypertension, myopia, obstructive sleep apnoea and migraine were not found to be the associated factors of glaucoma in this study. On the other hand, established diabetic retinopathy was found to be a protective factor against glaucoma with an odd ratio 0.6 (95%CI 0.357–0.996). Positive family history of glaucoma in patients with increased CDR is the strongest predictor of glaucoma among other known risk factors in Chinese diabetes patients. The primary care physicians should therefore enquire about family history of glaucoma in patients with incidental finding of increased CDR. Positive family history justifies prompt referral to ophthalmologists for early assessment and management.