

Artificial intelligence assisted opportunistic screening: from algorithm to real world study

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Artificial intelligence assisted opportunistic eye screening: from algorithm to real world study

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Oral and poster abstract text (Arial, size 10 font, left aligned, maximum 250 words)

Background

Half of all cases of major eye diseases are undetected in Australia, primarily because many of these conditions are asymptomatic in their early stages. The use of retinal photography is an effective screening tool; however, it is highly dependent on interpretation by clinical experts, posing a significant challenge to this model. Considering this, we developed a novel and innovative artificial intelligence (AI) based automatic grading algorithm to detect DR.

Objectives

To combine a deep learning algorithm for the detection of common blinding eye diseases with the accessibility of endocrinology & primary care-based screening to create an opportunistic screening model.

Method

Adults with diabetes were recruited from endocrinology outpatient clinics and Aboriginal Medical Services. Participants underwent non-mydratic, single field fundus photography and images were uploaded to the EyeGrader™ interface for automated grading and real time reporting of results. End-user acceptance was assessed using questionnaires and one-one interviews. All images were manually graded by a retinal specialist to determine disease detection rates.

Results

In total, 199 participants were screened for DR. Ninety-two percent of participants reported that they were either satisfied or very satisfied with the automated screening model and 91% reported that they were likely or extremely likely to use the service again. The sensitivity and specificity of the algorithm for correct referral was 85.7% and 92%, respectively. Approximately 60% of participants adhered to their referral recommendations.

Conclusions

AI-based screening in real-world settings appears to be accurate, feasible and well accepted by patients