Is it time to consider glaucoma screening cost-effective? - Authors' reply

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Authors' reply

We appreciate the interest shown in our Article by Piotr Kanclerz and colleagues, and we would like to address some important issues they have raised in their letter. Kanclerz and colleagues state that "Data regarding the prevalence of transition from one stage of glaucoma to another are scarce". Although this statement is generally true, our analysis has benefited from a population-based study[1] on glaucoma screening in China, in which baseline examinations were done in 2010 and follow-up was done in 2015. In addition to detailing the incidence of primary open-angle glaucoma, this study also provided rates of clinical progression among patients with mild, moderate, and severe glaucoma, and unilateral blindness. Our access to unpublished data from this study has allowed us to calculate the probabilities of transition from one stage of glaucoma to the next, including from unilateral to bilateral blindness.

Kanclerz and colleagues note that our utility data "cited one study", which is incorrect. In one of our tables, we cited three papers to support the utility estimates that we used in those with different stages of glaucoma. The utilities of primary open angle glaucoma (POAG) of different severity were based on studies by Burr and colleagues[2] and Sun and colleagues;[3] these studies applied multidimensional health-related quality of life measures rather than measure of visual acuity only.

Kanclerz and colleagues suggest that "the applied utility seemed relatively low". We agree that the quality-of-life utility scores are high, since people living with glaucoma in high-resource countries (such as Finland)[4] have better access to support systems for visually-impaired people. However, it is reasonable to assume lower utilities in developing country settings, where such assistance is relatively scarce. Our results for the cost-effectiveness of glaucoma screening remained robust under sensitivity analyses that assumed utility scores that were 10% higher. Additionally, the cost-effectiveness analysis that used years of blindness avoided, which is an outcome independent of quality-of-life utility scores, also suggested that glaucoma screening is cost-effective.

Kanclerz and colleagues are correct that no single technology to diagnose glaucoma with optimal rates of both sensitivity and specificity yet exists, which is why our model assumed a high incidence of false-positive diagnoses among people with primary angle closure glaucoma and a high incidence of false-negative diagnoses among people with POAG, based on a real-life outreach community screening programme done by one of our authors (YL). It should be noted that our analysis has accounted for the costs associated with comprehensive hospital examinations for people with false-positive screening results, and the eventual costs incurred by those in whom true glaucoma diagnosis was missed. Nevertheless, we found that our conclusion that glaucoma screening in China is cost-effective was robust, and we agree with Kanclerz and colleagues that improved accuracy with the use of artificial intelligence could make prospects for glaucoma screening in this setting even more encouraging in the future.

We declare no competing interests.

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