

Mass screening of myopia using smartphones

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Prevalence of myopia has reached epidemic proportion, in Asia and US. There are two pain points in myopia control. First, mass screening for myopia in a population of hundreds of millions on a yearly basis is extremely challenging, and access to vision testing is a bottle neck at the beginning of vision care flow for many patients. Second, monitoring of myopia progression is usually not in timely manner. To tackle the two pain points, we have developed a proprietary technology for measuring refraction error using a mobile application, without requiring any additional optical attachments. This app will enable teachers or parents to test the children, thereby reducing the burden on already strained healthcare work force and the cost to a society. Participation of all stake holders is a key to address the largest epidemic in the world. For this potential game changer to be utilized for mass screening, evaluation is needed to show that it is consistent with current clinical standard of vision screening, and also that lay persons are capable of accurately measuring vision using the app. In this study, we will compare 3 different vision measurement approaches in 100 school age children: with auto-refractor by a clinician (ground truth), with the app by study staff without vision care training, and with the app at home by the parents. We hypothesize that the latter two methods are consistent with the clinical method. The findings can inform how the app can be used for screening and monitoring myopia progression.