

### Conflict of interest

The authors declare no conflict of interest.

### Author contributions

We certify that all coauthors have read the final manuscript within their respective areas of expertise and participated sufficiently in the study to take responsibility for it and accept its conclusions.

### References

- 1 Anwar M, Teichmann KD. Big-bubble technique to bare Descemet's membrane in anterior lamellar keratoplasty. *J Cataract Refract Surg* 2002; **28**: 398–403.
- 2 Mohsen RK, Mohammadali J, Ahmad S, Medi E, Farid K. Deep anterior lamellar keratoplasty for Maroteaux-Lamy syndrome. *Cornea* 2010; **29**(12): 1459–1461.
- 3 Touboul D, Binder PS, Colin J. Intradescemetic air bubble trapping during deep anterior lamellar keratoplasty. *Cornea* 2012; **31**: 191–193.
- 4 Murphy C, Alvarado J, Juster R. Prenatal and postnatal growth of the human Descemet's membrane. *Invest Ophthalmol Vis Sci* 1984; **25**: 1402–1415.

R Arora, D Gupta, P Jain, G Goyal, Y Goel and JL Goyal

Cornea Services, Guru Nanak Eye Centre, Delhi, India  
E-mail: pjain811@gmail.com

*Eye* (2014) **28**, 495–496; doi:10.1038/eye.2014.5;  
published online 7 February 2014

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### Sir, Patient acceptance to smartphone technology to monitor and improve glaucoma health-care outcomes

It is well recognised that non-adherence of glaucoma eye drop medication could result in unnecessary changes to medication or listing for more invasive procedures, increasing risk to the patient and costs to the health-care establishment.<sup>1,2</sup> Non-adherence rates have been reported as varying between 5 and 80%.<sup>1</sup> Four major factors have been identified that affect patient adherence: medication factors, patient factors, provider factors, and environmental factors.<sup>3</sup> It is well recognised that smartphone usage is increasing and we believe that a glaucoma monitoring mobile application (App) can help to educate patients and improve patient adherence by improving all of these factors. We therefore surveyed a cohort of our patients to assess their smartphone usage and willingness to use such an application.

We undertook a prospective survey of patients attending their glaucoma follow-up appointment across two sites (Moorfields South at St Georges Hospital and Princess Royal University Hospital) during the first six months of 2013. Patients were asked to fill in a survey

form at the end of their visit and submit it anonymously at the reception desk. Self-reported data were collected on adherence with eye drop medication, reasons for missing treatment doses, smartphone usage, and interest in a medication adherence app.

Fifty patients completed the questionnaire. Mean age of respondents was 65.2 years (range 34–92 years) with a male:female ratio of 0.93:1. In all, 8/50 (16%) patients admitted to missing eye drops, reasons included difficulty remembering drops, unsure which drops to take, and running out of drops. Of the 50 patients, 41 (82%) had access to computer technology of which 18 patients (44%) had access to a smartphone. Of those that responded, 26/43 (60%) said that they would use a medication adherence App.

Our reported non-adherence rate is similar to other previous reports.<sup>1,4</sup> Although it is often perceived that elderly patients have limited access to smartphones, we have demonstrated that a large proportion of our patients did have access to smartphone technology and are willing to use them to improve their health outcomes. It is not clear, however, to what degree non-adherence affects progression of glaucoma and visual field defects, and we are currently in the process of developing an App that may help to answer this question.

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### References

- 1 Olthoff CM, Schouten JS, van de Borne BW, Webers CA. Noncompliance with ocular hypotensive treatment in patients with glaucoma or ocular hypertension an evidence-based review. *Ophthalmology* 2005; **112**: 953–961.
- 2 Zimmerman TJ, Zalta AH. Facilitating patient compliance in glaucoma therapy. *Surv Ophthalmol* 1983; **28**: 252–257.
- 3 Tsai JC. A comprehensive perspective on patient adherence to topical glaucoma therapy. *Ophthalmology* 2009; **116**: S30–S36.
- 4 Schwartz GF. Compliance and persistency in glaucoma follow-up treatment. *Curr Opin Ophthalmol* 2005; **16**: 114–121.

RMH Lee<sup>1</sup>, JD Oleszczuk<sup>2</sup>, JN Hyer<sup>3</sup> and G Gazzard<sup>4</sup>

<sup>1</sup>Department of Ophthalmology, Kings College Hospital, London, UK

<sup>2</sup>Department of Ophthalmology, Moorfields Eye Hospital, London, UK

<sup>3</sup>Department of Ophthalmology, Western Eye Hospital, London, UK

<sup>4</sup>NIHR Biomedical Research Centre in Ophthalmology, Moorfields Eye Hospital and UCL Institute of Ophthalmology, London, UK  
E-mail: rlee1@nhs.net

*Eye* (2014) **28**, 496; doi:10.1038/eye.2014.22;  
published online 14 February 2014