

BRIEF COMMUNICATION



# Using QR smartphone technology to improve patient communication and information distribution

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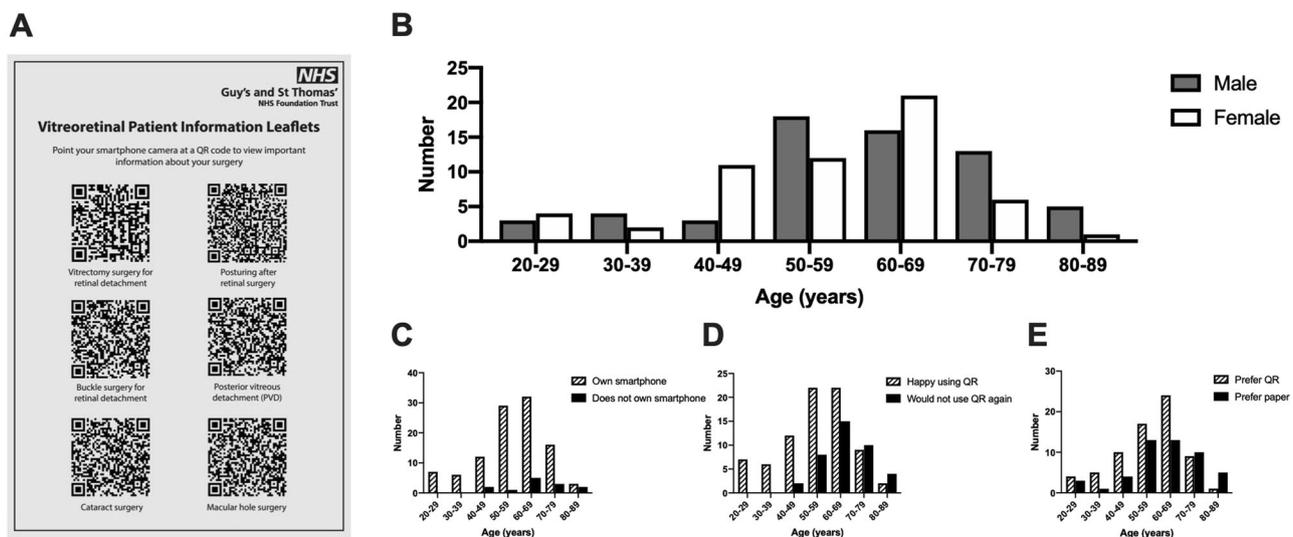
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Effective patient communication in everyday clinical practice remains challenging, and has been further highlighted through the COVID-19 pandemic. Patients will often only retain around 50% of the information provided to them in consultation, and may even deny information ever being given to them [1]. However, access to information relevant to diagnosis and treatment is important for informed consent and can improve patient satisfaction. Traditionally, printed copies of hospital-approved patient information leaflets (PILs) have been used for this purpose, but both their availability in clinic and uptake can be variable [2]. We developed a novel digital approach to provide patients with vitreoretinal surgical information using QR smartphone technology, and aimed to broaden the uptake of PILs in our clinic. Gardiner et al. suggested a technique of using QR codes for patients to scan to access PILs, and their team created a sheet of QR codes that surgeons could present to patients. They did not however demonstrate its utility [3]. Similarly, we have created a

poster of QR codes linking to Trust-approved PILs relevant to the Vitreoretinal Service at St. Thomas' Hospital, London. The poster was prominently displayed within each clinic room (Fig. 1A) and piloted in attending patients who subsequently completed a survey. To our knowledge, this is the first published real-world assessment of the use of QR technology for dissemination of PILs to patients in the clinical setting.

119 patients were surveyed between November 2020 and April 2021. 52% were male (Fig. 1B). Median age was 60 years (range 20–84 years). 82% had a smartphone capable of utilizing a QR code, a trend which will likely only increase with time. Overall, 67% felt comfortable with the technology once they had used the QR poster and 54% expressed a preference for QR code-mediated information acquisition over a printed copy (Fig. 1C–E). Smartphone ownership, confidence with the technology and preference of QR over paper PIL acquisition were all significantly associated with younger age ( $p = 0.013$ ,  $p < 0.0001$ , and  $p =$



**Fig. 1 Application of QR smartphone technology for distribution of PILs. A** Poster of QR codes linking to Trust-approved PILs which was displayed in clinic rooms. **B** Distribution of patients surveyed by age and sex. **C** Smartphone ownership distributed by age. **D** Opinion on use of QR technology distributed by age. **E** Preference for modality of PIL acquisition distributed by age.

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0.039 respectively, Mann–Whitney tests, Fig. 1C–E). Current smartphone users will age which is likely to mitigate the observed lower acceptability in the over 70 years age groups in the future.

Feedback from patients helped us to evaluate the advantages and limitations of the QR code based distribution of patient information. Several liked the fact that they were able to adjust the font size and brightness of the QR-linked PIL on their smartphone and could send the document to other devices or to relatives. The majority who trialed the QR poster were satisfied and did not wish to take a printed copy.

We conclude that QR code posters serve as a suitable and environmentally sustainable alternative to printed PILs for patient access to relevant clinical information

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## AUTHOR CONTRIBUTIONS

AA: data analysis, data collection, writing (original draft). DAHL: methodology, supervision, writing, (reviewing and editing). HOO: conceptualization, data analysis, supervision, writing (reviewing and editing)

## COMPETING INTERESTS

The authors declare no competing interests.

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