DIABETIC RETINOPATHY SCREENING

The potential for handheld fundus cameras

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INTRODUCTION

Nigeria has over 160 million people, with a prevalence of diabetes estimated to be around 4%.

Lagos, its most populous city, remains without a diabetic retinopathy screening and monitoring programme.

Between August 2013 – April 2014, the initial feasibility of a community screening programme using handheld retinal imaging devices was studied in Lagos.

Figure 1. Training the team at the Guinness Eye Centre, Lagos on the use of the OPTOMED SMARTSCOPE M5 Fundus Camera.

METHODS

An SMARTSCOPE M5 handheld digital fundus camera was loaned from OPTOMED, and a team from Manchester Royal Eye Hospital & Royal Bolton Hospital received training on its use.

The unit was taken to Lagos by the UK team. Basic operational training was given to the would be operators.

50 consecutive consenting diabetic patients attending the retinal clinic at the Guinness Eye Centre, Lagos were recruited for this feasibility study.

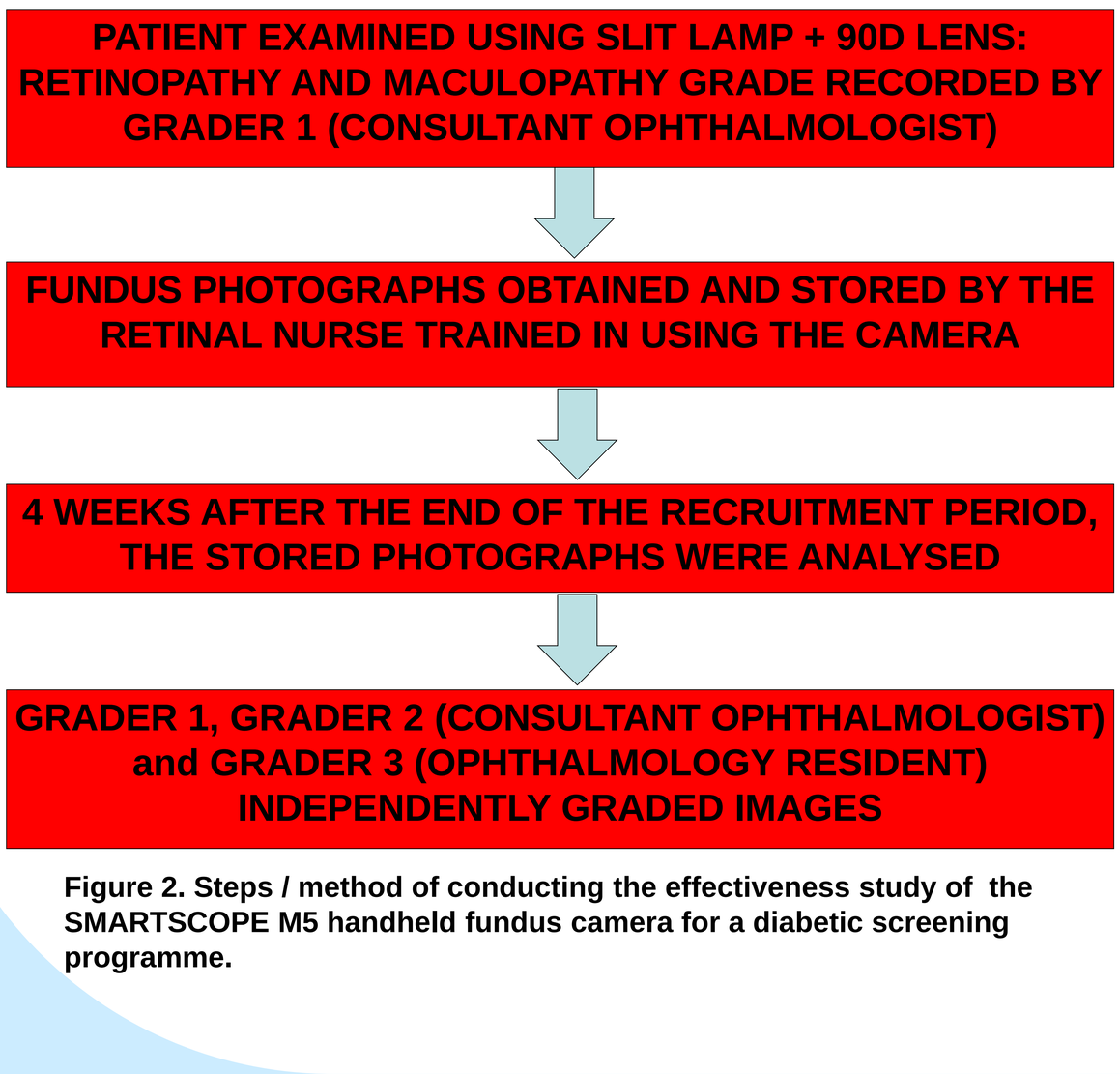

Figure 2. Steps / method of conducting the effectiveness study of the SMARTSCOPE M5 handheld fundus camera for a diabetic screening programme.

RESULTS:

50 patients (100 eyes) were recruited into the study.
Excluded from the clinical vs imaging correlation analysis were:

- 2 eyes that were clinically ungradable on clinical examination
- 3 eyes which had images that were ungradable by all graders
- 3, 15, and 0 eyes for retinopathy which was ungraded, and 11, 3, and 6 eyes for maculopathy which was ungraded by Grader 1, 2 and 3 respectively for various reasons (inadequate area covered, media or cornea opacity, movement artefact).

The clinical grade by Grader 1 using a slit lamp + 90D lens was considered to be the true grade of the retinopathy and maculopathy.

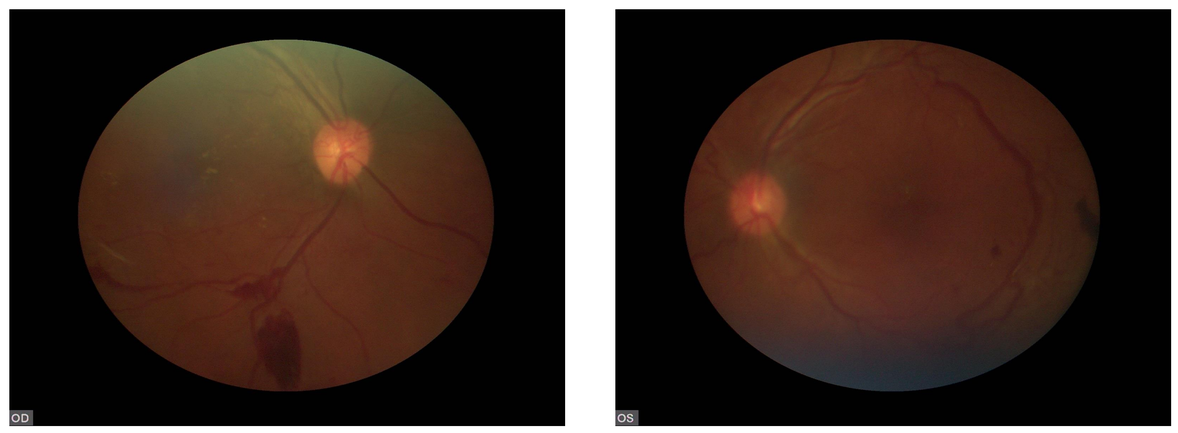

Figure 3 & 4. Sample images taken with the SMARTSCOPE M5 Fundus Camera

The image grade was equal to or picked up a higher (more severe) grade of retinopathy by the following percentages.

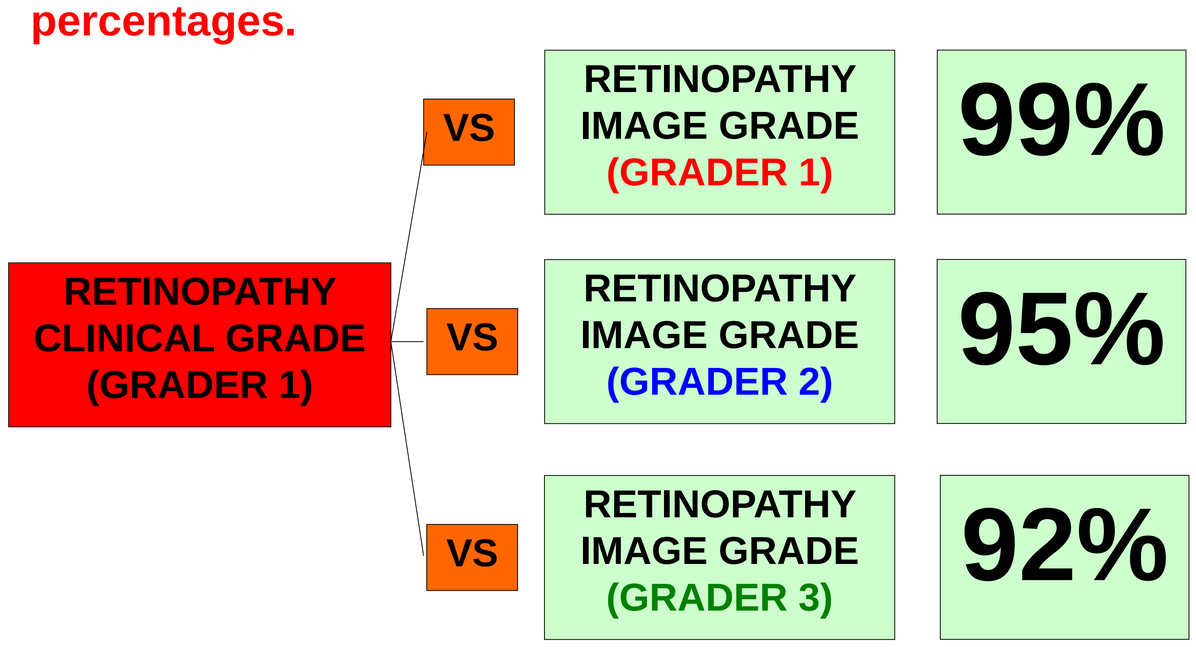

Figure 5. Correlation between clinical grade and image grade for retinopathy

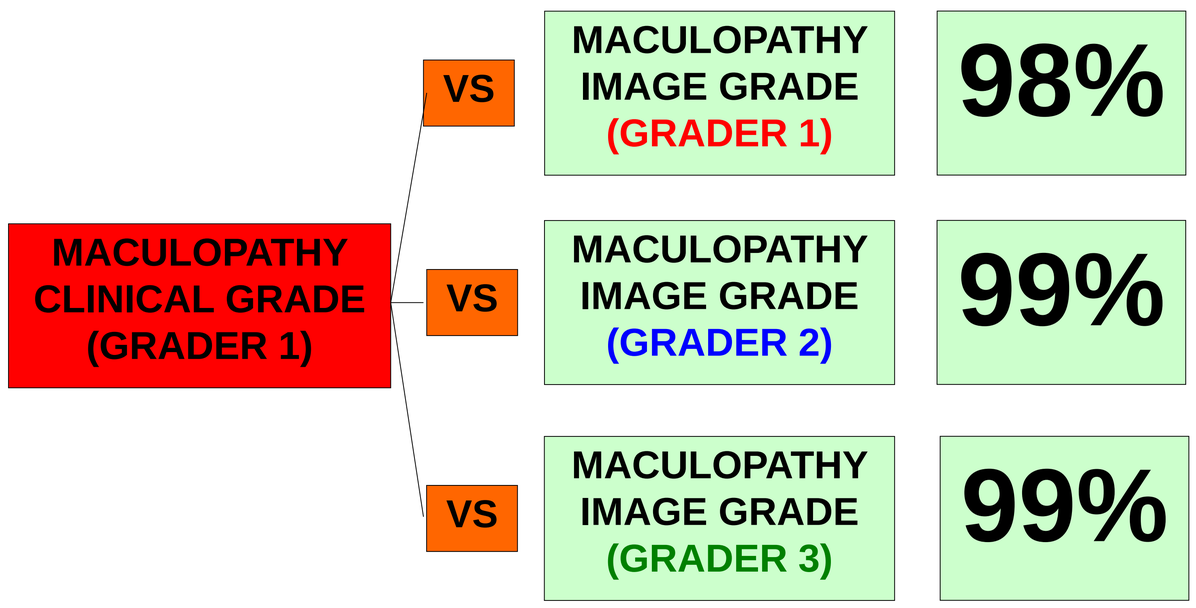

Figure 6. Correlation between clinical grade and image grade for maculopathy

CONCLUSION

With between 80 – 90% of images of the affected cohort sufficiently clear to be gradable, and a high correlation between clinical and imaging grades, it is feasible to use such portable devices for a mobile community based diabetic retinopathy screening programme.