This study was designed to assess the effects of refractive state and subject on 5 basic factors defining the quality of a retinal image: sharpness, colour, contrast, brilliance and centering. Our final goal was to describe a set of minimum requirements that do not over compromise image quality targeted at optimizing diagnostic techniques, including cost savings for a new personal ID system based on morphometric retinal measurements.

INTRODUCTION

MATERIALS AND METHODS

SAMPLE 2846 retinal photographs acquired in 461 men and women aged between 18 and 90 years.

MATERIALS
• Questionnaire for anamnesis
• Non-mydriatic retinographer TRC-Nw200: with correcting lenses ranging from -33 to +40 diopters
• Auto-refractometer RM8000

METHOD Retinography quality was separately assessed by 2 observers in a blinded fashion by grading the 5 factors using the scale indicated below.

<table>
<thead>
<tr>
<th>Quality scores</th>
<th>Variables assessed</th>
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</thead>
<tbody>
<tr>
<td>1 Very poor</td>
<td>Sharpness</td>
</tr>
<tr>
<td>2 Poor</td>
<td>Brilliance</td>
</tr>
<tr>
<td>3 Average</td>
<td>Contrast</td>
</tr>
<tr>
<td>4 Good</td>
<td>Colour</td>
</tr>
<tr>
<td>5 Very good</td>
<td>Centering</td>
</tr>
</tbody>
</table>

The two observers similarly graded all the quality variables except centering and contrast (p=0.00).

When sample homogeneity was examined in groups of 50 retinographies in the order in which they were assessed, lower scores were observed in the first group compared to the remaining groups.

RESULTS

Eyes classified as mildly myopic always returned the highest quality scores, while hyperopic eyes showed the lowest scores, occasionally even yielding scores (mainly contrast scores) similar to severely myopic eyes. Among the differences, those between hyperopes and mild myopes were always significant for all the quality variables examined.

Higher quality scores were always recorded for eyes without astigmatism, followed by those with mixed astigmatism and finally by eyes with pure astigmatism. These differences were significant for all 5 quality characteristics.

CONCLUSIONS

✓ Quality scores obtained for the first 50 retinographies were significantly lower than those for the subsequent groups of photographs and these results were thus eliminated from the study. This finding highlights the need for prior training when interpreting the images provided by the instrument.
✓ Scores recorded in mildly myopic and hyperopic eyes differed significantly for each characteristic assessed. In the hyperopic eyes, the lower quality of the images can be attributed to an increasing age. However, the results obtained in patients with myopia indicate that the refractive error influences image quality except in terms of the factors brilliance and centering.
✓ Cylindrical errors negatively affected the 5 retinography quality variables. Astigmatism, whether pure or mixed, only affected the variable colour.

REFERENCES