

The Optyse™ Lens Free Ophthalmoscope: A suitable companion for medical students?

Abstract

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Purpose: The Optyse™, an inexpensive lens free ophthalmoscope marketed in 2005, claims it is comparable to other direct ophthalmoscopes. A study was undertaken to compare the new Optyse™ with the larger and more expensive Keeler Pocket within two main parameters, their ease of use and ability to correctly estimate vertical cup: disc ratio (VCDR) by medical students.

Methods: A randomized comparative study using 10 second year medical students with no prior experience of ophthalmology acted as assessors. 10 volunteer students were selected to act as patients. All assessors were given an introductory lecture followed by 15 minutes to practice using each instrument. Each assessor measured the VCDR in both eyes of each patient using both ophthalmoscopes sequentially and also rated the ease of use on a scale of 1 (could not use this scope) to 8 (determined a ratio with a low level of difficulty). Each assessor made 20 observations with each ophthalmoscope (10 dilated eyes and 10 undilated eyes). VCDRs were compared to a gold standard set by a Consultant Ophthalmologist using the same ophthalmoscope. Assessors gave an overall ease of use score (OEOU) from 1 (very difficult to use) to 10 (very easy to use) and patients reported the overall comfort of their examinations from 1 (uncomfortable) to 5 (very comfortable).

Results: Of 400 eye examinations a total of 220 VCDR measurements were made. 107 were made by the Optyse™ (62 dilated, 45 undilated) and 113 were made by the Keeler (60 dilated, 53 undilated). In terms of accuracy of VCDR estimations as compared to the gold standard, the Optyse™ outperformed the Keeler by 0.05 (p=0.002). The median EOU score was identical for both ophthalmoscopes (6, IQR 3-8, p=0.648). The median OEOU score was greater with the Optyse™ than with the Keeler (6.5, IQR 2-9 vs. 5.5, IQR 3-8, p=0.21). Patients found the Optyse™ and Keeler similarly comfortable (3.5, IQR 2-4 vs. 4, IQR 2-5, p=0.16).

Conclusions: Medical students found the Optyse™ as easy to use as the Keeler, more accurate in estimating the VCDR, and a suitable ophthalmoscope for undergraduate training.

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