

Patient-centred outcomes of cataract surgery in Australia

Pager *et al.* should be commended for attempting the challenging global cataract surgery outcome study reported in the August issue of *Clinical and Experimental Ophthalmology*.¹ The inclusion of visual disability, quality of life and satisfaction measures is an important approach that, as the authors state, has rarely been made. Patient-centred measures are needed where impairment is not fully captured by clinical measures.

High contrast visual acuity (VA) may fail to fully characterize visual impairment because it is relatively insensitive to optical degradation due to cataract.^{2,3} However, the validity of VA as an outcome measure depends upon methodology; detection of change depends upon retest reliability. Factors affecting the retest reliability of VA include chart type (Snellen, logMAR), scoring system (by-line, by-letter), forced-choice testing and endpoint criterion.⁴ Testing with logMAR charts gives twice the sensitivity to change of Snellen charts; 95% limits of agreement 0.14 versus 0.29 logMAR under an optimal testing paradigm.⁴ Pager *et al.* used Snellen charts (converted to logMAR scoring for analysis) with VA recorded from patients' notes. VA recorded in routine clinical practice is unlikely to have been collected using a forced-choice paradigm, a strict endpoint criterion and by-letter scoring so the retest limits of agreement would likely be substantially higher than 0.30 logMAR. VA tested in this manner would be unable to accurately define the reported changes: $6/15$ to $6/7.5 = 0.30$ logMAR. Better measurement of VA may have enabled identification of a significant correlation between VA and satisfaction. Similarly, improved VA may have been found in the 11 subjects with improved visual disability but unimproved VA.

The visual disability outcomes reported using the VF-14 are more expected,⁵ and do correlate with satisfaction. This is despite suboptimal measurement of visual disability. The authors acknowledge a ceiling effect problem, and the VF-14 has also been shown to have problems with population targeting.⁶ More importantly, the use of Likert or summary scoring does not produce a continuous measurement, so the true difference between pre- and post-operative score is unclear.⁷ This problem is common to all Likert scaled visual disability measures, yet is simply resolved using Rasch analysis.^{8,9} Rasch analysis uses response pattern probabilities iteratively to identify the scale structure of the latent variable being measured. Rasch analysis can be applied to any categorical scale and should be considered for cataract surgery outcome studies – for measures of visual disability, satisfaction or quality of life.¹⁰

Indeed it is the quality of life outcomes reported by Pager *et al.* that are the most troublesome. As the authors state 'The most surprising finding of this study is that health-related quality of life did not improve ... after surgery.' This concerned the authors: 'After all, the ultimate goal of cataract surgery is nothing more than to improve patients' quality of life, and the failure to achieve this goal calls into question the value of cataract surgery.' Or does it? Quality of life is made up of many domains such as: well-being, spirituality, financial concerns, sexuality/intimacy, etc. Which of these domains is cataract surgery likely to improve? The SF-36 used by Pager *et al.* contains questions in the following domains: general health (six questions), physical fitness/mobility limitations (ten), emotional well-being (three), pain (two), mood state (nine), social well-being (two) and disability (four). Probably only the last

six questions could be impacted by cataract surgery. Therefore the lack of response to cataract surgery is hardly surprising. What is surprising is that the authors were surprised by this, as the insensitivity of global quality of life measures to cataract surgery has been described previously, including in an Australian study.^{11,12}

Global cataract surgery outcome studies including patient-centred measures should be encouraged, but only if they are performed with optimal methodology are they likely to yield useful conclusions.

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