Invited Commentary

Demonstrating the Effectiveness of Low-Vision Rehabilitation With Outcomes of the Veterans Affairs Low Vision Intervention Trial II (LOVIT II)

Gary S. Rubin, PhD

Severe visual impairment, partial sight, or low vision (LV)—call it what you like, the long-term reduction in visual function takes a large toll on the affected individuals, their families, and society in general. Loss of independence, unemployment, depression, and increased mortality and morbidity all contribute to a diminished quality of life that characterizes LV. The total annual cost of low vision in the United States is estimated to be $5.5 billion plus an additional $10 billion due to lost quality-adjusted life years.[1]

Related article

Low-vision rehabilitation (LVR) has been available, albeit at a cost to the patient, since the latter half of the 20th century when the sight-saving philosophy that was pervasive at the time was pushed aside in favor of sight-maximizing strategies. Yet with more than 6 decades of experience with LVR, there is still debate whether LVR is effective and, if so, on how it should be provided, by whom, and for whom. There is a consensus that LVR should be multidisciplinary and that it should be started early, possibly before a stable end stage of visual impairments. However, the evidence supporting the consensus opinion is scarce. In 2012, a systematic review of the effectiveness of LV service provision identified only 52 relevant studies, and of these, only 7 met the higher standards of a randomized clinical trial.[2]

Fortunately, the emphasis on sound evidence has spread to LV research. It is widely recognized that high-quality evidence, including from randomized clinical trials, is needed if we are to convince health care commissioners, insurance companies, and government officials to support LVR. We have new instruments for measuring disability due to LV, and these new instruments are being used to evaluate the effectiveness of LVR provided by the US Department of Veterans Affairs, which is a pioneer in LV service provision in the United States.

Stelmack et al[3] documented large improvements in patients' visual ability in 4 domains: reading, visual information processing, mobility, and visual motor skills following 4 to 6 weeks of inpatient LVR provided at residential blindness rehabilitation centers. That study was followed by the Veterans Affairs Low Vision Intervention Trial (LOVIT)[4] conducted at 2 outpatient VA centers. LOVIT was a randomized clinical trial with patients randomized to LVR or a waiting list for 4 months. The patients in the treatment group received 5 weekly 2-hour sessions with the therapists plus 5 hours of homework per week. The same instruments were used to assess visual ability and, although the effects were smaller than those for the residential program, they were still judged to be clinically meaningful and statistically significant. Outcome measures for LOVIT were based entirely on patient-reported outcomes (questionnaires) and, given the lack of masking for the treatment group, the study was subject to Hawthorne effects—the tendency to show an improvement due to being the subject of attention in a study.

In this issue of *JAMA Ophthalmology*, Stelmack and colleagues[5] report on LOVIT II. This trial reduced the treatment to 1 to 3 therapy sessions with approximately 10 homework assignments. The control group was provided with the same LV aids as the treatment group but no additional LVR or homework. The effect of the additional training diminishes compared with the effect achieved with LOVIT but is still deemed to be clinically meaningful and statistically significant. Again, the interviewers were masked but the therapists and participants were not. Fortunately, the patient-reported outcomes were supplemented by a measure of actual reading performance (MNREAD test)[6] and, although the effect size was smaller for MNREAD than for self-reported visual ability, there was a clinically meaningful and statistically significant improvement in reading speed and reading acuity that was greater in the treatment group than in the control group.

Taken together, these 3 studies provide convincing evidence that LVR can improve visual ability. Several important questions remain:

1. Who benefits from LVR? Having been carried out in the VA setting, more than 90% of the participants in the 3 studies were white males, all with macular disease. Do the results generalize to women and to the nonwhite population or to those with other eye conditions? In addition, LOVIT II found that LVR was effective only for patients with best-corrected acuity worse than 20/63. When in the course of a progressive eye disease should LVR be started?
2. What elements of LVR are critical for success? These 3 studies spanned the range from a month of inpatient treatment to 1- to 3-hour therapy sessions provided in an outpatient setting. How much LVR is required? Is homework critical? Might homework be sufficient?
3. Low-vision services in the VA system provide all prescribed LV devices to the veteran free of charge. Elsewhere in the United States, most LV services charge the patient for the device, sometimes at a highly inflated price to help cover the costs of providing the service. The VA services dispense more-expensive LV aids, such as telescopes and electronic devices, that are more likely to be beneficial with training than simple hand and stand magnifiers.
4. What outcomes should be evaluated and how? These studies focused on self-reported reading ability. Why rely on self-report when we have several validated reading tests—MNREAD, International Reading Speed Texts,[7] and the

Radner test,[8] among others? One argument is that highly standardized reading tests are not representative of actual reading tasks. However, it has been shown that performance on clinical reading tests is indicative of reading performance at home,[9] although there are significant discrepancies between self-reported reading ability and measured reading speed.

5. Is LVR cost-effective? How long do the effects last? LOVIT II included a quality-of-life scale and a health utility measure, presumably to be used in a health economic evaluation. However, neither of these tools showed any improvement and received little further attention.

These questions notwithstanding, the LOVIT studies represent a major contribution to the evidence base for LVR.

ARTICLE INFORMATION

Author Affiliation: UCL (University College London) Institute of Ophthalmology, London, United Kingdom.

Corresponding Author: Gary S. Rubin, PhD, UCL (University College London) Institute of Ophthalmology, 11-43 Bath St, London EC1V 9EL, United Kingdom (g.rubin@ucl.ac.uk).

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