

Occupational Therapy Interventions for Older Adults With Low Vision

Stacy Smallfield, Jennifer Kaldenberg

Evidence Connection articles provide clinical application of systematic reviews developed in conjunction with the American Occupational Therapy Association's (AOTA's) Evidence-Based Practice Project. Findings from the systematic review of occupational therapy for older adults with low vision were published in the January/February 2020 issue of the *American Journal of Occupational Therapy (AJOT)* and in AOTA's *Occupational Therapy Practice Guidelines for Older Adults With Low Vision*, published in the March/April 2020 issue of *AJOT*. In this article, we describe a case report of an older adult with low vision who was referred to outpatient occupational therapy services because of a recent progression of her age-related macular degeneration that led to a decline in functional independence. Each article in the Evidence Connection series summarizes the evidence from the published reviews on a given topic and presents an application of the evidence to a related clinical case. These articles illustrate how the research evidence from the reviews can be used to inform and guide clinical decision making.

Clinical Case

Mary, age 84 yr, was referred to low vision rehabilitation services because of a history of dry (atrophic) age-related macular degeneration (AMD). She reports a recent decline in her visual status and difficulty with recognizing people's faces, medication management, baking, and reading her mail. Mary is widowed and lives alone in a suburban townhome. She has support from three adult children and seven grandchildren. One of her sons lives nearby. Her medical history includes a right hip replacement 7 yr ago.

Occupational Therapy Initial Evaluation and Findings

Mary's occupational therapist conducted an in-home occupational profile and initial evaluation, which revealed the following information:

- Mary is independent in eating, grooming, showering, dressing, and household mobility.
- Mary's functional vision limits her ability to read food labels, recipes, and cooking instructions and to manage medications. It also limits her ability to look at photos of her grandchildren that her children send electronically.
- Her visual impairment limits her ability to socialize with friends and family. She no longer attends religious services, because she struggles to recognize people's faces and read the hymnal. Mary cannot drive anymore and relies on friends, family, or ride sharing to access the community.
- Mary enjoys visiting with friends and family in her home, especially her grandchildren. She uses a tablet computer to stay in contact with family members who do not live locally and to access ride-sharing services.
- Mary was trained as a nurse but stopped working outside the home when she and her husband had children. Before her recent visual decline, Mary volunteered as a Sunday school teacher and at her local hospital.
- Mary describes her home as being very dark with limited overhead lighting. The home has few windows.
- Previous performance patterns included sleeping late, preparing and eating a light brunch, volunteering at the hospital three afternoons each week, and baking cookies for her grandchildren. She video calls her family most evenings.

Citation: Smallfield, S., & Kaldenberg, J. (2020). Evidence Connection—Occupational therapy interventions for older adults with low vision. *American Journal of Occupational Therapy*, 74, 7402390010. <https://doi.org/10.5014/ajot.2020.742004>

Over the previous 3 mo, Mary noticed a gradual worsening of her visual function and her ability to complete valued occupations. She wants to learn strategies for maintaining independence in medication management and the reading and safety required for baking. She wants to find ways to participate in religious services and interact with other parishioners and continue to remain socially connected to family and friends through the use of technology. Additional assessment findings from the initial evaluation are presented in [Table 1](#).

Occupational Therapy Intervention

Mary participated in all of eight scheduled occupational therapy sessions. After the initial evaluation, the occupational therapy practitioner used a multicomponent approach to intervention ([Coulmont et al., 2013](#); [Goldstein et al., 2015](#); [Pearce et al., 2011](#); [Renieri et al., 2013](#); [Ryan et al., 2013](#); [Stelmack et al., 2012](#)). This approach included education about the eye condition, resource advocacy, training in problem-solving strategies ([Rovner et al., 2013](#)), environmental modification, and eccentric viewing ([Chung, 2011](#); [Palmer et al., 2010](#); [Seiple et al., 2011](#)); training in the use of optical and nonoptical electronic and mainstream technology ([Gill et al., 2013](#); [Kaldenberg & Smallfield, 2016](#)); and instruction in adaptive strategies to facilitate performance of daily occupations ([Kaldenberg & Smallfield, 2013, 2020](#); [Liu & Chang, 2020](#); [Smallfield & Kaldenberg, 2020](#)). Examples of interventions that could be implemented with Mary are described in the sections that follow.

Intervention 1

Session 1 included education about AMD, initial training in problem solving, and environmental modification. Mary was educated on the progressive nature of AMD, and the occupational therapy practitioner reviewed the importance of daily

Table 1. Assessment Findings

Assessment	Findings
COPM (Law et al., 2019)	<ul style="list-style-type: none"> The COPM was used to complete Mary's occupational profile (AOTA, 2017). Mary's Performance and Satisfaction scores were 3 out of 10. She was dissatisfied with her performance in medication management, reading recipes and hymns, kitchen safety, facial recognition, and use of technology for social engagement.
Observation of occupations (assessed through clinical observations and interview)	<ul style="list-style-type: none"> Mary demonstrated independence in dressing, grooming, and functional mobility in her home with increased time and use of self-taught compensatory tactile and auditory substitution strategies. As a result of her recent visual decline, an observed baking task and cleanup (measuring and pouring, reading recipes, dial setting) were difficult. Mary was unable to read a recipe or medication label. Mary verbalized difficulty with matching colors of clothing. When using her tablet, she was unable to easily locate the icons of frequently used applications.
R-SRAFVP (Snow et al., 2018)	<ul style="list-style-type: none"> The R-SRAFVP was used to assess performance of daily tasks requiring visual function. On the R-SRAFVP, Mary reported that she requires significant assistance with health management tasks, meal preparation, clothing care, reading and writing tasks, and personal preference activities. She reported independence with personal grooming, using the telephone, and functional mobility. Financial management was assessed as not applicable because her family completes this task. Mary's score on the R-SRAFVP was 63 out of a possible total of 116 points (54%).
Functional vision screening	<ul style="list-style-type: none"> Components of the biVABA (Warren, 2006) were used to assess functional visual acuity, field, and contrast sensitivity. Intermediate visual acuity was 20/160 OD, 20/200 OS, 20/160 OU; reading visual acuity was 20/125 OD, 20/200 OS, and 20/125 OU with letter omissions to the right. Peripheral visual field was within functional limits. Mary was able to recognize numbers to the 10% level in contrast sensitivity.
Reading assessment	<ul style="list-style-type: none"> The MNRead (Mansfield et al., 1994) was used to assess reading ability. Mary had a critical print size of 2M at 65 words per minute.
Self-reported falls	<ul style="list-style-type: none"> Mary reports no falls in the past 3 yr.
GDS (Yesavage et al., 1982–1983)	<ul style="list-style-type: none"> The GDS is a 15-item screening tool for depression. A score of 0–5 indicates normal mood, and a score >5 indicative of depression. Mary scored a 3 on the GDS, indicating that she is not at risk for depression at this time.

Note. BiVABA = Brain Injury Visual Assessment Battery for Adults; COPM = Canadian Occupational Performance Measure; GDS = Geriatric Depression Scale; OD = right eye; OS = left eye; OU = both eyes; R-SRAFVP = Revised Self-Report Assessment of Functional Visual Performance.

screening with the Amsler grid ([American Macular Degeneration Foundation, n.d.](#)) to monitor disease progression. She was able to verbalize the need to relay changes in her vision to her eye care provider. In addition, they reviewed available community resources, including peer support groups, access to vision-specific assistive technology, and available transportation options.

Because of the progressive nature of AMD, active problem solving was used throughout intervention. The practitioner worked with Mary to identify problems, generate potential strategies, and begin to implement selected strategies for improving desired occupational performance. Initial problems Mary identified were medication management, cooking and baking, reading mail, looking at electronic photos, and recognizing others' faces. The remaining time in the first session was used to address strategies to improve reading mail. The occupational therapy practitioner recommended establishing a reading and writing area in Mary's home, which included the addition of a flexible gooseneck lamp that can be directed onto the reading material. They generated potential strategies to enlarge print size and agreed to evaluate potential options in the next session.

Intervention 2

Session 2 focused on evaluating potential strategies to enhance reading performance. Mary currently has a handheld magnifier and a tablet computer (iPad, Apple, Cupertino, CA). Before trialing assistive technology, the practitioner discussed Mary's use of eccentric viewing with her. They determined that Mary's 2:00 preferred retinal locus position (PRL; an alternate viewing position) may be an effective strategy and will be reinforced throughout intervention. The practitioner then demonstrated appropriate use of the iPad for enlarging recipes, mail, and medication labels using the pinch-and-zoom technique. Mary trialed using the iPad for these tasks (she had previously only used it for video calling and accessing ride-sharing services) and agreed to continue to practice using it between sessions.

Intervention 3

Session 3 continued to focus on identifying potential strategies to enhance reading for occupational performance and integrating these strategies into daily routines. The practitioner reviewed how to use the handheld magnifier for spot reading. Mary agreed it would be helpful to use the magnifier in the grocery store, in restaurants, and at religious services. In addition, under-cabinet lighting was identified as a strategy to enhance her reading ability in the kitchen for cooking and baking tasks. Mary struggled to see and safely set the dials on appliances, so high-contrast tactile bump dots were used to mark settings. Strategies were developed to ensure thorough cleaning of kitchen surfaces and the refrigerator (e.g., development of cleaning patterns and scheduled removal of perishable items). A portable light bar was trialed to assist in color identification and matching clothing in her bedroom.

The occupational therapy practitioner and Mary reviewed eccentric viewing strategies, specifically to improve facial recognition while attending religious services and at the hospital while volunteering. Mary was able to effectively use her identified PRL during training with her family. Mary's son was present during the session and was educated on ways to support her use of eccentric viewing. Finally, the occupational therapy practitioner provided Mary with homework to continue to practice eccentric viewing in community settings between sessions.

Intervention 4

Session 4 focused on use of mainstream technology to enhance performance in desired occupations. Mary demonstrated increased proficiency in the use of the iPad and identified use of the photo and camera applications as effective strategies for reading medication labels, recipes, and mail. The practitioner demonstrated how Mary could use the iPad for social communication, leisure reading, and viewing photos received electronically from her family. Specifically, the practitioner assisted Mary in accessing audiobooks from her local library on her iPad and adjusted the low vision accessibility settings to enlarge the print size of her email messages. Mary verbalized interest in using the

iPad for other tasks, which led the practitioner to recommend community resources for continued exploration of use of the iPad to enhance social and leisure participation.

Conclusion

Mary met her goals after completion of 8 wk of outpatient occupational therapy services provided in the home. Mary reported that she increased her performance with and satisfaction in cooking and baking, reading mail, managing medications, and viewing photos. She was independent in completing these tasks with the use of adaptive strategies, environmental modifications, and technology, as observed by the occupational therapy practitioner. She was also more satisfied with attendance at religious services with the use of her portable handheld magnifier and eccentric viewing for facial recognition.

Mary's scores on the Canadian Occupational Performance Measure (Law et al., 2019) improved to an 8/10 for Performance and 9/10 for Satisfaction. On the Revised Self-Report Assessment of Functional Visual Performance (R-SRAFPV; Snow et al., 2018), Mary reported that she requires minimal assistance with health management tasks, reading and writing tasks, and personal preference activities. She reported modified independence in personal grooming, meal preparation, clothing care, telephone use, and functional mobility. Financial management was assessed as not applicable because Mary's family continues to complete these tasks. Mary's total score on the R-SRAFPV improved to 91 of a possible total of 116 points (78%). The MNRead (Mansfield et al., 1994) was used to reassess reading ability. Mary's critical print size was 2M at 100 words per minute. No significant changes were found on the components of the Brain Injury Visual Assessment Battery (Warren, 2006), although Mary did not omit letters to the right as a result of her increased use of eccentric viewing.

This article provided an example of how to apply evidence from the systematic reviews of occupational therapy for older adults with low vision (Liu & Chang, 2020; Nastasi, 2020; Smallfield & Kaldenberg, 2020) to inform and guide clinical decision making. For further evidence-based information on low vision, see AOTA's *Occupational Therapy Practice Guidelines for Older Adults With Low Vision* (Kaldenberg & Smallfield, 2020) or the AOTA website (<https://www.aota.org/Practice/Productive-Aging/Evidence-based/EBP-Low-Vision.aspx>). ■

References

- American Macular Degeneration Foundation. (n.d.). *Amsler's chart to test your sight*. Retrieved from <https://www.macular.org/wp-content/uploads/2016/05/amslerchart.pdf>
- American Occupational Therapy Association. (2017). AOTA occupational profile template. *American Journal of Occupational Therapy*, 71(Suppl. 2), 7112420030. <https://doi.org/10.5014/ajot.2017.716S12>
- Chung, S. T. (2011). Improving reading speed for people with central vision loss through perceptual learning. *Investigative Ophthalmology and Visual Science*, 52, 1164–1170. <https://doi.org/10.1167/iovs.10-6034>
- Coulmont, M., Fougeyrollas, P., & Roy, C. (2013). Can we associate the hours of clinical services at the rehabilitation outcomes? The case of the visual impairment rehabilitation program. *Health Care Manager*, 32, 154–166. <https://doi.org/10.1097/HCM.0b013e31828ef643>
- Gill, K., Mao, A., Powell, A. M., & Sheidow, T. (2013). Digital reader vs print media: The role of digital technology in reading accuracy in age-related macular degeneration. *Eye*, 27, 639–643. <https://doi.org/10.1038/eye.2013.14>
- Goldstein, J. E., Jackson, M. L., Fox, S. M., Deremeik, J. T., & Massof, R. W.; Low Vision Research Network Study Group. (2015). Clinically meaningful rehabilitation outcomes of low vision patients served by outpatient clinical centers. *JAMA Ophthalmology*, 133, 762–769. <https://doi.org/10.1001/jamaophthalmol.2015.0693>
- Kaldenberg, J., & Smallfield, S. (2013). *Occupational therapy practice guidelines for older adults with low vision*. Bethesda, MD: AOTA Press.
- Kaldenberg, J., & Smallfield, S. (2016). Training older adults with low vision to use a computer tablet: A feasibility study. *British Journal of Occupational Therapy*, 80, 117–122. <https://doi.org/10.1177/0308022616648172>
- Kaldenberg, J., & Smallfield, S. (2020). Occupational therapy practice guidelines for older adults with low vision. *American Journal of Occupational Therapy*, 74, 7204395010. <https://doi.org/10.5014/ajot.2020.742003>
- Law, M., Baptiste, S., Carswell, A., McColl, M., Polatajko, H., & Pollock, N. (2019). *Canadian Occupational Performance Measure* (5th ed., rev.). Altona, Manitoba: COPM Inc.

- Liu, C. j., & Chang, M. C. (2020). Interventions within the scope of occupational therapy practice to improve performance of daily activities for older adults with low vision: A systematic review. *American Journal of Occupational Therapy, 74*, 7401185010. <https://doi.org/10.5014/ajot.2020.038372>
- Mansfield, J. S., Legge, G. E., Luebker, A., & Cunningham, K. (1994). *MNRead acuity charts: Continuous-text reading-acuity charts for normal and low vision*. Long Island City, NY: Lighthouse Low Vision Products.
- Nastasi, J. A. (2020). Occupational therapy interventions supporting leisure and social participation for older adults with low vision. *American Journal of Occupational Therapy, 74*, 7401185020. <https://doi.org/10.5014/ajot.2020.038521>
- Palmer, S., Logan, D., Nabili, S., & Dutton, G. N. (2010). Effective rehabilitation of reading by training in the technique of eccentric viewing: Evaluation of a 4-year programme of service delivery. *British Journal of Ophthalmology, 94*, 494–497. <https://doi.org/10.1136/bjo.2008.152231>
- Pearce, E., Crossland, M. D., & Rubin, G. S. (2011). The efficacy of low vision device training in a hospital-based low vision clinic. *British Journal of Ophthalmology, 95*, 105–108. <https://doi.org/10.1136/bjo.2009.175703>
- Renieri, G., Pitz, S., Pfeiffer, N., Beutel, M. E., & Zwerenz, R. (2013). Changes in quality of life in visually impaired patients after low-vision rehabilitation. *International Journal of Rehabilitation Research, 36*, 48–55. <https://doi.org/10.1097/MRR.0b013e328357885b>
- Rovner, B. W., Casten, R. J., Hegel, M. T., Massof, R. W., Leiby, B. E., Ho, A. C., & Tasman, W. S. (2013). Improving function in age-related macular degeneration: A randomized clinical trial. *Ophthalmology, 120*, 1649–1655. <https://doi.org/10.1016/j.ophtha.2013.01.022>
- Ryan, B., Khadka, J., Bunce, C., & Court, H. (2013). Effectiveness of the community-based Low Vision Service Wales: A long-term outcome study. *British Journal of Ophthalmology, 97*, 487–491. <https://doi.org/10.1136/bjophthalmol-2012-302416>
- Seiple, W., Grant, P., & Szlyk, J. P. (2011). Reading rehabilitation of individuals with AMD: Relative effectiveness of training approaches. *Investigative Ophthalmology and Visual Science, 52*, 2938–2944. <https://doi.org/10.1167/iovs.10-6137>
- Smallfield, S., & Kaldenberg, J. (2020). Occupational therapy interventions to improve reading performance of older adults with low vision: A systematic review. *American Journal of Occupational Therapy, 74*, 7401185030. <https://doi.org/10.5014/ajot.2020.038380>
- Snow, M., Warren, M., & Yuen, H. K. (2018). Revised Self-Report Assessment of Functional Visual Performance (R-SRAFVP)—Part II: Construct validation. *American Journal of Occupational Therapy, 72*, 7205205020. <https://doi.org/10.5014/ajot.2018.030205>
- Stelmack, J. A., Tang, X. C., Wei, Y., & Massof, R. W.; Low-Vision Intervention Trial Study Group. (2012). The effectiveness of low-vision rehabilitation in 2 cohorts derived from the veterans affairs Low-Vision Intervention Trial. *Archives of Ophthalmology, 130*, 1162–1168. <https://doi.org/10.1001/archophthalmol.2012.1820>
- Warren, M. (2006). *The Brain Injury Visual Assessment Battery for Adults* (4th ed.). Lenexa, KS: visABILITIES Rehabilitation Services.
- Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huang, V., Adey, M. B., & Leirer, V. O. (1982–1983). Development and validation of a geriatric depression screening scale: A preliminary report. *Journal of Psychiatric Research, 17*, 37–49.

Stacy Smallfield, DrOT, MSOT, OTR/L, BCG, FAOTA, is Associate Professor of Occupational Therapy and Medicine and Assistant Director, Occupational Therapy Entry-Level Professional Programs, Washington University School of Medicine, St. Louis, MO; stacy.smallfield@wustl.edu

Jennifer Kaldenberg, DrPH, MSA, OTR/L, SCLV, FAOTA, is Clinical Assistant Professor of Occupational Therapy, Boston University, College of Health and Rehabilitation Sciences: Sargent College, Boston, MA.