

## Current Trends in Occupational Therapy Low Vision Rehabilitation

May, 2012

This research, submitted by Amber Chonsky, has been approved and accepted in partial fulfillment of the requirements for the degree of Master of Science in Occupational Therapy from the University of Puget Sound.

---

Committee Chairperson: Lucretia Berg, MSOT, OTR/L

---

Reader: George S. Tomlin, PhD, OTR/L

---

Director, Occupational Therapy Program: George S. Tomlin, PhD, OTR/L

---

Dean of Graduate Studies: Sarah Moore, PhD

### Abstract

In the U.S. the number of adults age 40 and older who are blind or have low vision is 3.3 million (National Eye Institute, 2004) and it is expected to reach 5.5 million by the year 2020 (U.S. Department of Health and Human Services, 2011). The background and training occupational therapists receive on disability and aging puts them in a position to serve this population of individuals with low vision concerns. This study described the level of knowledge, confidence and practices of occupational therapists in the U.S. who work in physical disability settings with regard to the assessment and treatment of adult clients with low vision. A survey was mailed to 250 currently practicing occupational therapists with 58 of those returned meeting the inclusion criteria. Overall, respondents reported reasonable knowledge and confidence related to evaluating and treating adult clients with low vision. However, thirty-two respondents indicated that they felt additional education or training was needed to provide effective low vision treatment for their clients. This is despite the fact that most had entry-level education and continuing education that addressed low vision rehabilitation. It is essential that occupational therapists have the basic knowledge, tools and resources to effectively and confidently assess and treat the millions of Americans with low vision.

### Current Trends in Occupational Therapy Low Vision Rehabilitation

In the U.S. the number of adults age 40 and older who are blind or have low vision is 2.7% or 3.3 million (National Eye Institute, 2004). This number is expected to reach 5.5 million by the year 2020 (U.S. Department of Health and Human Services, 2011). Older adults with a decline in vision have more difficulty performing activities of daily living (ADL) and instrumental activities of daily living (IADL) compared to other adults (Crews & Campbell, 2001).

In 1990 the Healthcare Financing Administration defined low vision as a physical impairment for which physicians could refer their patients to rehabilitation services, including occupational therapy (Warren, 1995). Following this change in reimbursement coverage, the October 1995 issue of the *American Journal of Occupational Therapy (AJOT)* was devoted to the topic of low vision rehabilitation as an emerging area of practice for occupational therapists. Warren (1995) challenged occupational therapists to seize the opportunity to develop an appropriate frame of reference for treating patients, to widen the body of knowledge through scholarly literature and to broaden the education of new therapists.

Bachelder and Harkins (1995) stressed that occupational therapists can contribute to the services already provided by the current network of vision service providers, including ophthalmologists, optometrists, technicians, rehabilitation teachers and orientation and mobility specialists. Collaborating with these professionals would require occupational therapists to have additional education in pathology of ocular conditions as well as instruction in optics and the proper use of magnification devices (Bachelder & Harkins, 1995). Occupational therapists can provide skilled training in the functional use

of the devices prescribed by medical providers. The use of magnifiers, closed circuit televisions and other low vision assistive devices (LVAD) can be learned in the context of meaningful activities such as reading the newspaper or following a recipe for preparing meals. Occupational therapists can also work with low vision clients to address their home environment and collaborate to find solutions to low lighting, poor contrast and excessive clutter which can all lead to increased difficulty performing meaningful occupations.

Currently, occupational therapists can apply for specialty certification in low vision (SCLV) from the American Occupational Therapy Association (AOTA, 2009). The AOTA Board of Directors (2011), as a part of its Centennial Vision, recently identified low vision rehabilitation as one area of advocacy focus to ensure that Medicare continues to cover occupational therapy services. It is important that occupational therapists continue to expand the provision of low vision services as elderly clients living in rural areas likely do not have access to other community-based low vision rehabilitation programs (Bachelder & Harkins, 1995; Warren, 1995).

There is a need for occupational therapists in the area of vision rehabilitation not only for the elderly population but also for those with various neurological injuries that can cause vision problems, such as head injuries, Parkinson's disease, stroke, tumors, and multiple sclerosis, though these areas are beyond the scope of the current study (Rosenfeld, 2011). The national association supports therapists in pursuing this emerging practice area by identifying low vision rehabilitation in its Centennial Vision and offering the opportunity for specialty certification (AOTA, 2011). To what extent occupational

therapists working in adult physical disability settings have accepted the challenge posed by Warren in 1995 is relatively unknown.

### **Background**

Low vision can be defined as a decline in visual acuity, loss of visual field, reduced contrast sensitivity or other ocular dysfunctions that decrease usable vision and that cannot be reversed through the use of glasses or other medical and surgical procedures (Bachelder & Harkins, 1995; Colenbrander & Fletcher, 1995). Decreases in the amount of usable vision can be caused by a number of medical conditions including, but not limited to, age-related macular degeneration (AMD), diabetic retinopathy, glaucoma and cataracts.

According to the National Eye Institute (2009), AMD is the number one cause of vision loss in adults over 60 years of age. AMD results in loss of the central visual field and can affect many activities including driving, reading, the ability to recognize faces and other tasks requiring fine detail. In contrast, glaucoma affects the peripheral visual field resulting in tunnel vision and difficulty with mobility. It can lead to complete loss of vision without treatment (National Eye Institute, 2009). Sensitivity to light and glare is also common in adults with glaucoma (Lampert & Lapolice, 1995).

Diabetic retinopathy, a complication resulting from diabetes mellitus, causes damage to the blood vessels of the retina and may cause blood to leak into the eye, creating floaters. Floaters can result in blurred or missing areas of vision. Laser therapy can clear bleeding but if left untreated diabetic retinopathy can cause severe loss of vision and even complete blindness (National Eye Institute, 2009). Cataracts, another age-related eye disorder, result in loss of vision due to clouding of the lens of the eye. Vision

becomes dull and blurry and the ability to distinguish colors decreases (National Eye Institute, 2009).

Low vision from these impairments and others impacts the ability of elderly persons to perform daily activities as shown by Crews and Campbell (2001). The researchers used data from the Second Supplement on Aging (SOA-II) (National Center for Health Statistics, 1998) to compare limitations in daily activities and social participation between older adults with vision loss and those without. The SOA-II used a face-to-face interview to compile information from a cohort of individuals ages 70 years and older. Crews and Campbell (2001) compared the responses to 42 variables dealing with daily activities and social participation between the two groups. They found that those with vision loss were more likely than their peers to report activity limitations and difficulty in the following areas: walking, getting into or out of a chair or bed, community mobility, cooking, shopping, handling money, and taking medications. Social participation, such as talking on the telephone or getting together with a friend, was reported to occur less often in those with visual impairments as well. Nearly one third (31.5%) of the participants with a vision loss reported a desire to be more involved in social activities, compared to less than one fourth (22.9%) of those without a vision loss. Additionally, older adults with vision loss were two times more likely to self-report feeling depressed.

More recently, Smith, Ludwig, Andersen, and Copolillo (2009) explored the way in which adaptation to vision loss is influenced by engagement in meaningful occupations. The researchers conducted semi-structured interviews with seven women who ranged in age from 65 to 91. The women were affected by AMD, glaucoma,

retinitis pigmentosa or retinal hemorrhage. The individual interviews focused on the participants' meaningful activities including how they adapted those activities, their level of satisfaction in their performance, their motivation to perform activities, their inability to complete certain activities, as well as their impression of the future need to adapt their activities. The interviews demonstrated that these older women found ways to perform their meaningful activities differently or with help from others, which in turn helped them adapt to their vision loss. The women sought assistance from family members, peers with low vision, and agencies specialized in helping those with vision loss. It was also common among the participants to use adaptive equipment to complete a particular activity. However, the researchers did note that a few of the women were not using their low vision assistive devices to reach their maximum potential. With skilled instruction from an occupational therapist, clients with low vision with a minimal knowledge in the use of their devices could instead perform the tasks most meaningful to them in a new and adapted way as the device intends.

Prior to the 1990 change of the Health Care Financing Administration's definition of physical impairment to include low vision, persons with low vision were unable to be referred to or to receive services from occupational therapists (Warren, 1995). The medical health care system provides for a person's ocular health as managed by a physician. Ophthalmologists and optometrists strictly evaluate a person's remaining vision and provide prescription eyewear, reading prisms, telescopic glasses and a variety of other magnification devices to help improve vision (Beaver & Mann, 1995). To address other limitations caused by the vision loss, a patient may be referred to community based low vision rehabilitation programs funded through federal, state or

charitable organizations (Lampert & Lapolice, 1995; Warren, 1995). These programs may employ a variety of professionals to provide services. Orientation and mobility (O&M) specialists provide instruction in safe community mobility and are skilled professionals who assist the visually impaired with proper cane use and navigating public transportation (Beaver & Mann, 1995). Rehabilitation counselors provide case management for vocational counseling and other service referrals. Other professionals working in traditional community based programs include rehabilitation teachers and electronic aid specialists (Beaver & Mann, 1995).

Unfortunately, the elderly low vision population in particular continues to be underserved by these available programs (Bachelder & Harkins, 1995). One reason is older adults often attribute visual changes to the aging process and may not seek medical attention, therefore missing the opportunity to be referred for services (Bachelder & Harkins, 1995). Because occupational therapists frequently serve this population for other medical issues, the profession is in a position to identify visual loss and provide visual rehabilitation services to its clients. Occupational therapists can collaborate with other low vision specialists, including optometrists and ophthalmologists, as part of a multidisciplinary team to provide rehabilitation services to adults with low vision (Markowitz, 2006; Rosenfeld, 2011). Lamoureux et al. (2007) used a multidisciplinary team consisting of occupational therapists, O&M specialists, orthoptic specialists and welfare specialists in their outcome study. The participants reported overall improvement in restriction of ADL after rehabilitation. Reading, accessing information, and emotional well-being were significantly improved. Those participants that used occupational



therapy services showed greater gains in mobility and independence as well (Lamoureux et al., 2007).

The background and training that occupational therapists receive on disability and aging allows for the formation of an appropriate treatment plan to increase a person's participation in occupations such as ADL, work, leisure, social participation, and education (Ellexson, 2004; Markowitz, 2006; Warren, 1995). A focus on meaningful occupation can improve the process of adapting to vision loss within the aging population. Occupational therapists also have the appropriate background to address psychosocial issues related to vision loss, such as depression and lack of social participation.

Providing low vision rehabilitation in a group setting is one way occupational therapy can increase the social participation of those experiencing low vision. Several studies (Dahlin Ivanoff, Sonn, & Svensson, 2002; Eklund, Sjöstrand, & Dahlin Ivanoff, 2008) compared group low vision rehabilitation sessions to individual low vision rehabilitation sessions. Both studies showed an improvement in participants' independence and confidence in performing ADL when involved in the group treatment program with a multidisciplinary team that included occupational therapy. This model of treatment could easily be addressed by occupational therapists in settings such as skilled nursing facilities, long term care and community based programs.

Campion, Awang, and Ward (2010) surveyed occupational therapists in the United Kingdom (U.K.) regarding their knowledge, confidence, and inclusion of vision rehabilitation in their practice. From their survey, 75% of respondents indicated that visual impairment was included in their assessment of patients. However, a quarter of

respondents failed to even address visual impairment in their assessment due to a reported lack of competence and confidence in working with clients with low vision. Additional training or education in vision rehabilitation was felt to be necessary by 81% of respondents. This additional training was reportedly obtained by 58% of respondents, but only 14% of those relayed feeling confident in assessing and implementing a treatment plan for their clients in regard to low vision (Campion et al., 2010). It is possible that occupational therapists in the U.S. have similar sentiments and feel a need to obtain more training in the evaluation and treatment of visual impairments.

One way that occupational therapists in the U.S. are able to pursue additional training in the treatment of clients with low vision is through the low vision rehabilitation graduate certificate program at the University of Alabama at Birmingham (University of Alabama at Birmingham, 2011). This series of courses prepares practitioners to treat clients with low vision and also to obtain the specialty certification in low vision (SCLV) from the AOTA (University of Alabama at Birmingham, 2011). However, occupational therapists are not required to have this additional training to work with clients with low vision. The U.S. population is aging and many occupational therapists work in settings with clients who may possess a visual impairment in addition to their primary referred impairment. For this reason, it is important that therapists, even those not receiving specialty certification, are aware of low vision and the appropriate assessments and interventions. The extent to which occupational therapists are identifying visual loss and addressing it in their interventions is mostly unknown.

The purpose of this study, therefore, was to describe the level of knowledge, confidence and practices of occupational therapists in the U.S. who worked in physical

disability settings with regard to the assessment and treatment of adult clients with low vision, whether low vision was the primary diagnosis or not.

## **Method**

### **Research Design**

A descriptive study was conducted to inquire into the knowledge, confidence and practices of U.S. occupational therapists assessing and treating adult clients with low vision. A survey was determined to be the most efficient and feasible means to directly obtain this information from occupational therapists. Data were collected through a mail survey of a sample of occupational therapists in the U.S. who had recently treated adult clients in physical disabilities settings with low vision concerns.

### **Participants**

The ideal population for this study was all occupational therapists in the U.S. who treat or have treated an adult client in a physical disabilities setting with a low vision concern. However, logistically it was not possible to survey the entire ideal population. For the purposes of this study, the accessible population was current members of the American Occupational Therapy Association (AOTA) who were members of either the Gerontology Special Interest Section (SIS) or the Physical Disabilities SIS. The Gerontology SIS is comprised of therapists involved with or interested in the care of older adults, and therefore likely to have treated adult clients with a visual impairment in their practice. Additionally, the Physical Disabilities SIS was chosen to include therapists who may have treated adult clients with low vision concerns secondary to their primary physical disability. A systematic random sample of 250 in equal proportions from each SIS, with no possibility of duplicate names, was requested from AOTA. Any

survey recipient who had worked with an adult client with a low vision concern in the last year was invited to complete the entire survey. Persons who received a survey who had not treated adult clients with low vision in the last year were asked to indicate as such and return the incomplete survey.

### **Instrumentation**

A survey of dichotomous, multiple choice and Likert scale questions was used to obtain information from practitioners about their treatment of adult clients with low vision. A copy of the complete survey is found in the Appendix. Current research determined appropriate areas of interest to include in the survey questions. Input from the faculty research committee and the four occupational therapists who piloted the survey also aided the survey development. Participants were asked to provide demographic information including current practice setting, educational degrees, additional certifications or training, number of years as a treating therapist, number of clients with low vision, and types of diagnoses encountered. The survey addressed therapists' knowledge of and confidence assessing low vision in adult clients with regard to optics of the eye, visual acuities and fields, color/contrast discrimination and others. Respondents were also asked to rate their knowledge and confidence of treatment intervention strategies for adult clients with low vision. Examples included use of environmental adaptations, compensatory techniques, and the use of assistive technology or other equipment. Therapists were also asked to indicate if additional training in any of the previously mentioned areas was needed to improve their ability to provide low vision treatment.

Another focus of questioning related to the frequency that therapists performed an assessment of visual impairments and the types of assessment tools used. Last, several questions addressed whether therapists were involved in a multidisciplinary team approach, if they provided group intervention sessions, how they involved the families and also the effectiveness of the low vision treatment they provided.

### **Procedure**

The proposal was submitted to the university Institutional Review Board (IRB) for approval. Following IRB approval a pilot survey was tested on four currently treating occupational therapists that have experience working with adult clients with low vision. This ensured that participants understood the questions and that the survey could be completed within a reasonable amount of time. Following the analysis of the pilot survey, the necessary changes were made.

After final research committee approval, the survey was prepared for mailing. Each envelope was addressed with a mailing label and mailed first class. The mailing packet included a cover letter explaining the purpose of the study with a handwritten signature, a copy of the survey and a pre-addressed stamped return envelope for the completed survey. The return envelopes were coded with a three digit number from 001 to 250. Each number corresponded to a second mailing label for each participant stored in a locked filing cabinet at the university. Participants used the coded return envelope to mail their completed surveys to the investigator at the university. To maintain confidentiality, names of participants and their three digit codes were not on the survey form. When the investigator received a survey it was removed and separated from its coded return envelope. The three digit code on the envelope was matched to the

appropriate second mailing label. Both the second mailing label and the return envelope were destroyed to protect the participants' identifying information. This also ensured that initial respondents did not receive a second survey mailing.

In order to improve the response rate, a second survey was mailed three weeks after the initial mailing. The remaining second mailing labels for those identified as non-respondents from the initial mailing were used for the second survey mailing. At this point, all mailing labels were either used or destroyed and no personal information from participants remained in the investigator's possession. Any surveys received from the second mailing were removed from the return envelope and the envelope was destroyed. Data collection was concluded four weeks following the second mailing. Information from surveys was recorded using IBM SPSS Statistics version 19 (SPSS).

### **Data Analysis**

The data were recorded and analyzed using SPSS to determine frequency and percentage of responses to each survey item. Descriptive statistics including central tendency, distribution and variability were used to characterize the data. Associations between demographic and response variables were investigated. Demographics included work setting, number of years working as a registered occupational therapist, entry-level education on low vision and any additional continuing education obtained. Chi square was used to analyze whether pairs of variables had an association. Additional comments provided by respondents were considered during data analysis.

## Results

### Response Rate

The survey recipients returned a total of 92 surveys to the investigator. One mailing was returned by the post office as undeliverable. Thirty-four of the received surveys indicated that the recipients had not worked with an adult client with low vision in the last year. Therefore the recipients did not meet the inclusion criteria for this study and did not complete the entire survey. Taking this into account the new sample size was 215. With 58 respondents meeting the inclusion criteria and completing the full survey, the response rate was 26.9%. The second mailing yielded only 10 additional responses, therefore a cross tabulation between respondents from the first and second mailings was not completed.

### Demographics of Respondents

Respondents' number of years in practice as an occupational therapist ranged from 1 to 39 with a mean of 11.6 ( $SD = 10.11$ ). Forty-three percent of respondents entered the profession with a bachelor's degree and 57% entered with a master's degree. Only 24% reported a bachelor's degree as their highest degree level, whereas 69% of respondents reported that their highest academic degree was a master's, with the majority having a master's in occupational therapy. Other master's degrees reported were in the fields of rehabilitation, health sciences, business administration, geriatrics and education. A doctoral degree in occupational therapy (OTD) was reported as the highest degree obtained by only one respondent. The respondents provided services at 14 different types of practice settings, as shown in Table 1, with skilled nursing facilities being the most frequently reported practice setting (32.1%). All regions of the U.S. (Northwest,

Southwest, Midwest, Northeast, Southeast, see Appendix for details) were represented by at least one respondent.

### **Education on Low Vision Rehabilitation**

Respondents were asked about the information they received on low vision rehabilitation during their entry-level academic program, continuing education courses pursued on the topic and any specialty certifications obtained in their career. Thirty-nine respondents (67.2%) indicated that low vision rehabilitation information was included in their entry-level education in the form of lectures embedded within another course. Only one respondent reported receiving additional education in the form of observation and clinical labs on low vision home modification during their entry-level education. No education on low vision rehabilitation was included in the entry-level education of 19 respondents (32.8%). Surprisingly, there was no significant association between entry-level education and number of years in practice. However, only three of fourteen respondents who reported seventeen or more years experience in the profession also reported receiving entry-level education on low vision rehabilitation. Thirty-five respondents (60.3%) reported that they pursued continuing education courses that included information on low vision rehabilitation, ranging from zero to four courses within the last three years ( $M = 1.37$ ). None of the respondents indicated having additional certification in low vision, gerontology or environmental modification. One respondent (1.7%) indicated having additional certification as an assistive technology professional, and twelve respondents (24%) noted other certifications including a certified driver rehabilitation specialist, a certified orientation and mobility specialist and others not relevant to the current study.



### **Types of Clients with Low Vision**

The survey asked respondents several questions about the adult clients whom they treated for low vision concerns. Forty-seven respondents (81%) reported that the majority of adult clients treated were not referred with a specific or identified low vision concern. Reportedly, on average only 17.8% ( $SD = 21.48$ ) of adult clients treated for low vision were referred because of a specific or identified low vision concern. AMD was indicated by almost all of the respondents (98.3%) as a diagnosis they encounter. Most respondents also noted glaucoma (87.9%), cataracts (79.3%) and diabetic retinopathy (72.4%) as common diagnoses. Only 15.5% of respondents reported treating clients for low vision concerns related to retinitis pigmentosa. The National Eye Institute (2004) identifies AMD, glaucoma, cataracts and diabetic retinopathy as the eye diseases most frequent in adults in the U.S. Most respondents (84.9%) reported that the majority of adult clients they treated for low vision concerns were women. The respondents' clients also reportedly lived in a variety of living situations including private homes with or without caregivers, independent living/senior housing, assisted living, adult family homes and long term care.

### **Evaluation of Low Vision**

A portion of the survey focused on the respondents' evaluation of adult clients for low vision concerns. The respondents were given the definition of a functional visual assessment as defined by Watson (2001). Watson defined the functional visual assessment to include the assessment of functional visual acuities, functional visual fields, color/contrast discrimination, ocular-motor skills, lighting, use of visual and non-visual cues and the performance of ADLs and IADLs that are affected by vision.

Respondents were asked to indicate how often they included a functional visual assessment as defined above for their adult clients with low vision, rating the frequency as *never*, *occasionally*, *frequently* or *always*. Only 11 respondents (19.6%) indicated that they *always* performed a functional visual assessment, with four (36.3%) of those reporting inpatient acute rehabilitation as their primary practice setting. Nineteen respondents (33.9%) stated that they *never* included this type of assessment with an adult client with low vision. Of those respondents, nine (47.4%) indicated a skilled nursing facility as their primary practice setting. Most respondents indicated that they *occasionally* (30.4%) or *frequently* (16.1%) included this assessment when evaluating clients with low vision. When asked how often the functional visual assessment was performed in the client's current living environment, 62.3% of respondents indicated *never*, 22.6% responded *occasionally* and the remaining 15.0% said *frequently* or *always*. Of those that responded *never*, one third (33.3%) indicated a skilled nursing facility as their primary practice setting.

Respondents were given a list of common assessment tools used for low vision clients and asked to indicate all of the tools they used with adult clients with low vision. The assessment tools used are shown in Table 2. The top assessment tools used by respondents answering this question were the SKILL chart (14.6%), the Lea Acuity Chart (14.6%), and the BiVABA (12.2%). Twenty-two percent of respondents indicated they used other assessment tools and specified performance of ADL and IADL, Optec 2000, Stereo Optical Contrast Acuity, visual field assessment, Home Sight Low Vision Screen, environmental assessment, and "Berry" (Beery?). Seventeen respondents (29.3%) did not respond to this question.

Respondents were then asked to reflect on their knowledge and confidence of the following aspects of the visual systems and the functional visual assessment: Basic Optics of the Eye, Functional Visual Acuities, Functional Visual Fields, Color/contrast Discrimination, Oculo-motor Skills, Lighting and Performance of ADL and IADL. They were asked to rate both their knowledge and confidence on a Likert scale for each of the preceding seven categories. The scale was graded as 1 *No Knowledge*, 2 *Some Knowledge*, 3 *Reasonable Knowledge*, 4 *High Knowledge* and 5 *Very High Knowledge*. Figures 1 and 2 show the distribution and frequency of respondents self reported level of knowledge and confidence for each category of the functional visual assessment. Overall, respondents reported *Reasonable Knowledge* ( $M = 3.23$ ) of and *Reasonable Confidence* ( $M = 3.09$ ) in the functional visual assessment.

There were no statistically significant associations between respondents' overall average knowledge or confidence and their entry-level or continuing education and the frequency they reported performing a functional visual assessment. However, those who reported taking continuing education courses rated themselves as having *High Knowledge* and *Very High Knowledge* in Lighting more often than those who reported no continuing education courses,  $X^2(3, N = 56) = 8.052, p = .045$ . Additionally, higher knowledge of Color/contrast Discrimination ( $X^2(12, N = 57) = 22.043, p = .037$ ) and higher confidence about Basic Optics of the Eye ( $X^2(12, N = 53) = 21.846, p = .039$ ) were associated with a higher frequency of performance of the functional visual assessment.

In order to show the difference between a respondent's reported level of knowledge and their reported level of confidence for each functional visual assessment category, a new variable was created from the difference between the reported knowledge

and reported confidence. This resulted in a number between 4 and -4. A negative difference between the knowledge and confidence rating indicated the respondent may be over confident regarding that topic, whereas a positive difference indicated a possible lack of reported confidence based on the reported knowledge. A difference of zero indicated the respondent's confidence was commensurate with their knowledge. Table 3 shows the mean differences in each category. On average there was a slight lack of confidence among respondents concerning Basic Optics of the Eye, Functional Visual Acuities, Functional Visual Fields, Color/contrast Discrimination ( $M = .17$ ), Oculo-motor Skills and Performance of ADL and IADL ( $M = .13$ ). Respondents on average were slightly over confident about Lighting ( $M = -.02$ ). Overall, respondents reported having appropriate levels of confidence in relation to their knowledge of the functional visual assessment as these differences were quite close to zero. There were no significant associations between a respondent's entry-level education, continuing education or their frequency of performing a functional visual assessment and the difference in their knowledge and confidence of the aspects of the functional visual assessment.

### **Intervention for Low Vision**

Respondents were similarly asked to rate their knowledge and confidence, using the same Likert scale, of the following treatment intervention strategies: Environmental Adaptations, Compensatory Techniques, Assistive Technology and Equipment, Community Mobility, and Driving Evaluation and Training. Figures 3 and 4 show the distribution and frequency of respondents self reported level of knowledge and confidence for each treatment intervention strategy. Overall, respondents reported having

*Reasonable Knowledge* ( $M = 2.83$ ) of and *Reasonable Confidence* ( $M = 2.69$ ) in the treatment intervention strategies.

There were no statistically significant associations between respondents overall average knowledge or confidence of treatment intervention strategies and their entry-level education. However, entry-level education on low vision rehabilitation was associated with higher knowledge of Compensatory Techniques ( $X^2 (3, N = 56) = 10.486, p = .015$ ), higher knowledge of Driving Evaluation and Training ( $X^2 (4, N = 58) = 10.273, p = .036$ ) and higher confidence of Community Mobility ( $X^2 (4, N = 57) = 12.237, p = .016$ ). Additionally, those who reported taking continuing education courses related to low vision rehabilitation were associated with reporting higher overall knowledge of treatment interventions ( $X^2 (14, N = 56) = 27.161, p = .018$ ), higher knowledge of Environmental Modifications ( $X^2 (3, N = 56) = 10.193, p = .017$ ), and higher knowledge and confidence of Assistive Technology and Equipment ( $X^2 (3, N = 57) = 13.548, p = .009$ ;  $X^2 (4, N = 56) = 9.856, p = .043$ ). All other associations performed were not statistically significant.

Again, a new variable was created to show the difference between a respondent's reported level of knowledge and their reported level of confidence for each treatment intervention strategy. The mean differences are shown in Table 4. On average respondents were under-confident of their abilities in Driving Evaluation and Training ( $M = .27$ ). There was also a slight relative lack of confidence about Community Mobility intervention ( $M = .20$ ). Surprisingly, this lack of confidence was associated with respondents' entry-level education of low vision rehabilitation ( $X^2 (1, N = 56) = 7.029, p = .008$ ). Those who reported receiving entry-level education reported a lower level of

confidence in relation to their knowledge than those who did not receive entry-level education. Respondents' confidence was most commensurate with their knowledge concerning Environmental Adaptations ( $M = .05$ ).

Table 5 demonstrates the ADL and IADL that respondents indicated were addressed in their intervention with adult clients with low vision. Almost all respondents (96.6%) addressed self care in their intervention. Less than half of respondents addressed socialization (39.7%), shopping (29.3%) and community activities (29.3%).

When asked about how much time was devoted to low vision rehabilitation in one session, most respondents (62.1%) indicated that 0-25% of their session was used for low vision. Only five respondents (8.6%) noted that low vision rehabilitation was included in 76-100% of a session. Respondents were also asked to note how often they referred an adult client to another specialist for low vision (*never, occasionally, frequently, always*). Half of the therapists (50.9%) stated that they *occasionally* referred to other specialists, 17.5% *frequently* referred and 8.8% *always* provided a referral. Twenty-two percent of respondents indicated they *never* referred an adult client with low vision to another specialist. Respondents were also asked if they were part of a low vision rehabilitation team, to which only four respondents (7.0%) indicated yes. Only two respondents (3.5%) indicated yes to the question of whether or not they used group intervention for low vision rehabilitation.

The survey also asked respondents how often education on low vision and low vision rehabilitation were provided to a client's family or caregivers (*never, occasionally, frequently, always*). Most respondents (59.6%) stated that they *occasionally* provided education to family or caregivers. Only 8.8% *always* educated family or caregivers and

10.5% *never* educated family or caregivers. All respondents who provided education noted that they used verbal education (100%) and the majority also used written education (70%) or demonstration (78%).

When asked to rate the overall effectiveness of the available treatment interventions for adult clients with low vision as *ineffective, effective or neither ineffective nor effective*, 67.3% of respondents felt that overall the treatment interventions for low vision were *effective*. Only 3.6% felt that low vision treatment was *ineffective* and 29.1% rated low vision treatment interventions as *neither ineffective nor effective*. Last, respondents were asked if they felt they had adequate tools, resources and knowledge to provide effective low vision rehabilitation. Forty respondents (70.2%) indicated *No*. Respondents were asked to identify what areas they needed additional training or education to improve the effectiveness of their treatment for adult clients with low vision, which are shown in Table 6. Thirty-two respondents (86.5%) reported a need for additional training or education about assessment tools.

## **Discussion**

### **Education on Low Vision Rehabilitation**

The majority of respondents reported that low vision rehabilitation lectures had been included in their entry-level education. Of those who reported seventeen or more years of experience, indicating that they received their entry-level education before the 1995 *AJOT* issue devoted to low vision rehabilitation, only three had received this information. Since that time, almost all of the respondents reported receiving some form of low vision rehabilitation information in their entry-level education. However, 70.2% of respondents still reported that they felt they did not have the adequate tools, resources

and knowledge to provide effective low vision rehabilitation, similar to results found by Campion et al. (2010) in the U.K. Eighty-one percent of their respondents stated the need for additional training in low vision rehabilitation. The opportunity to learn more about low vision rehabilitation exists in the form of continuing education courses, graduate certificates and specialty certifications. More than half of the respondents indicated taking continuing education courses on low vision rehabilitation, but only one of the respondents held a specific low vision related specialty certification as a certified orientation and mobility specialist. This result would be expected, given that only 24 therapists are currently (2012) listed on the AOTA website as having obtained the SCLV.

### **Evaluation of Low Vision**

In Campion et al. (2010), 75% of respondents stated that assessment for visual impairment was included for their U.K. clients. Results of the current study reflected similar practices for therapists in the U.S. Unfortunately, nineteen respondents indicated that they *never* performed a functional visual assessment and almost half of those were practicing in a skilled nursing facility. The demographic of clients in this type of setting is quite likely to have a visual impairment, given their age and other physical impairments that can lead to eye disease. Occupational therapists in these settings may be the first health care professional to identify a visual impairment since it often goes unreported by the individual (Bachelder & Harkins, 1995). Therefore, it is vital that occupational therapists have the ability to assess their clients for a visual impairment and determine how it may be impacting their functioning.

In spite of this, seventeen respondents did not answer the question addressing the use of various assessment tools for low vision, yet this was the top concern that



respondents indicated as needing additional education or training. It is not surprising then that the reported frequency with which occupational therapists were assessing low vision was not higher. Without the proper training and knowledge of the tools used to assess low vision, a proper evaluation cannot be completed. And likewise, without frequent practice performing an assessment for low vision, a therapist is not likely to build confidence in that area. Those who reported taking continuing education courses reported higher knowledge and confidence in several areas, and they reported a higher frequency of completing a functional visual assessment.

The most number of respondents reported *Very High Confidence* in their knowledge of using Performance of ADL and IADL to assess low vision. This was likely due to the fact that this is a comfortable area for occupational therapists and a large focus of entry-level education. However, respondents were less confident in areas that could be considered the foundation of vision, such as visual acuities, visual fields and the basic optics of the eye. Perhaps these are areas of low vision rehabilitation that need to be further addressed in entry-level education in order to provide therapists with a basis to build their low vision rehabilitation skills.

### **Intervention for Low Vision**

The reported levels of knowledge and confidence of treatment intervention strategies was on average slightly lower than the knowledge and confidence of assessing low vision. However, the benefit of entry-level education or continuing education was associated with higher reported levels of knowledge and confidence in every treatment intervention strategy. Respondents without continuing education reported lower levels of knowledge and confidence about Assistive Technology and Equipment for low vision.

Respondents also indicated a desire for additional education about this treatment intervention strategy. Smith et al. (2009) found that participants in their study were not using low vision adaptive equipment properly or to the device's full potential. Perhaps this was due to therapists' lack of knowledge and confident use of these devices leading to an inability to properly teach clients in the use of said equipment.

In general, the majority of respondents reported addressing a wide variety of ADL and IADL in their treatment for low vision. Still, respondents did not report addressing the issues of socialization, shopping, and other community activities as frequently. Crews and Campbell (2001) showed that social participation occurred less often in those with visual impairments and one third of participants reported a desire to be more involved in social activities. Occupational therapists should be addressing these areas to allow clients with low vision to feel more connected and involved in their community and with peers. This may also help address the depression that older adults with vision loss were two times more likely to self-report (Crews & Campbell, 2001). Social participation can easily be addressed by providing low vision rehabilitation in a group setting, as this has been shown to be effective (Dahlin Ivanoff et al., 2002; Eklund et al., 2008), although results from the current study indicate group intervention occurs infrequently.

It is important to remember that low vision rehabilitation is not solely the responsibility of the occupational therapist and research indicates that a multidisciplinary approach improves outcomes (Lamoureux et al., 2007). Although very few respondents were part of an established low vision rehabilitation team, most have referred their clients to other specialists when necessary. Some respondents did indicate that they had never referred a client to another specialist. The reason for this is unknown. It could be that

their clients never needed additional services but it could also be that those respondents were unfamiliar with the other resources available concerning low vision rehabilitation.

Last, almost three quarters of respondents indicated they did not feel they had adequate tools, resources and knowledge to provide effective low vision rehabilitation. This is despite the fact that most had entry-level education and continuing education that addressed low vision rehabilitation, and overall they rated their knowledge and confidence as reasonable. It could be that therapists were not willing to rate their own knowledge and confidence lower because of fear of looking unprepared. However, when asked to reflect on whether tools or resources were adequate, they may have felt more comfortable admitting they were ill equipped to effectively treat low vision. Additionally, those who did not respond to the survey at all may have had feelings of inadequacy or incompetence on the topic of low vision rehabilitation.

### **Implications for Occupational Therapy**

As the baby boomer generation continues to age, the population of adults 65 and older who would benefit from occupational therapy services will grow. With aging comes a variety of age related changes, low vision concerns being just one. As quoted by Rosenfeld in the August 2011 *OT Practice*, Mary Warren shared:

We have two ways of viewing low vision these days. We view it as a specialty area of practice, but it is also just simply an aspect of productive aging. So we see it practiced a little bit differently. We want all occupational therapists to understand something about low vision and to be able to provide on a basic level, and then we want the specialist. (Rosenfeld, 2011, p. 11)

It is important that all occupational therapists working in practice settings with adult clients be equipped with the knowledge, the tools and the confidence needed to address low vision concerns for their clients. It is important that entry-level education

continues to provide the necessary knowledge about low vision rehabilitation, with particular attention to the assessment tools, assistive technology and equipment and environmental modification for those with low vision. It is also important that occupational therapists are knowledgeable about and collaborate with other vision specialists in order to provide the best care for their clients when more comprehensive care is needed. Additionally, therapists should be encouraged to pursue continuing education and even specialty certification through AOTA. In order to provide the best low vision rehabilitation to clients, there needs to be more than 24 specialty providers in the U.S. to which clients may be referred for more complete and specialized low vision rehabilitation.

### **Limitations**

The results from this survey may not be generalizable to the larger population of therapists in the U.S. who have treated adult clients with low vision since the sample was taken from the accessible population of AOTA members. The results may be representative of practitioners who were relatively more knowledgeable and more confident about low vision services. Additionally, the response rate was modest (26.9%).

It is also possible that some respondents may have excluded themselves incorrectly. Several indicated on their returned survey that they did not work with adult clients whose primary impairment was low vision, but that they may adapt their treatment based on vision concerns due to a secondary impairment. The very first question of the survey may not have clearly indicated that any therapist who treated adult clients with low vision, regardless of it being the primary diagnosis or not, was invited to complete the entire survey.

Another limitation to this study relates to the question of assessment tools used. The survey did not include *none* as an option, although many wrote in this response. However, it is unclear if the respondents who failed to answer did not use any assessment tools or if they used other tools and chose not to list them in the *other* category.

### **Future Research**

The field of occupational therapy may benefit from future research that considers the current curriculum requirements for low vision rehabilitation and how universities are choosing to address those requirements, similar to portions of Campion et al. (2010) study outcomes. This information would be useful in determining where current education may be lacking and if that is related to therapists' knowledge and confidence or desire for additional training in certain areas of low vision rehabilitation.

Additional research may also address the continuing education that is currently available on low vision rehabilitation. The number of courses available and the information that is presented may not be sufficient to prepare therapists to provide adequate low vision rehabilitation. Also, cost and time commitment required may be limiting a greater number of therapists from taking continuing education courses on low vision rehabilitation. This information could be useful for future development of educational opportunities.

### **Conclusions**

The results of the current study indicated that low vision rehabilitation was being addressed by occupational therapy for adult clients with low vision concerns. Warren originally challenged occupational therapists to develop an appropriate frame of reference for treating patients, to widen the body of knowledge through scholarly literature and to

broaden the education of new therapists. It appears that the change to a post-baccalaureate entry-level education has prompted the additional education on low vision and low vision rehabilitation to new therapists. Additionally, more than half (60.3%) of the respondents indicated that they had taken continuing education about low vision rehabilitation in order to expand their knowledge. Despite this, a large majority of respondents (70.2%) did not feel that they had adequate tools, resources or knowledge to effectively provide treatment for adult clients with low vision. The reasons for this feeling were not clear. However, it is clear that occupational therapy must continue to prepare entry-level practitioners to address visual impairments for adult clients and encourage additional training for those poised to provide specialty low vision care. The need is great and it is projected to only become larger. The new challenge is to ensure all therapists have not only the knowledge but also the confidence to effectively assess and treat the millions of Americans with low vision.

## References

- American Occupational Therapy Association. (2009). *Competencies, criteria, and client outcomes: Specialty certification in low vision*. Retrieved from [www.aota.org/DocumentVault/BCSC/43363.aspx](http://www.aota.org/DocumentVault/BCSC/43363.aspx)
- American Occupational Therapy Association. (2011). *AOTA board of directors approves priorities for FY2011*. Retrieved from [www.aota.org/Governance/BOD/Priorities-FY2011.aspx](http://www.aota.org/Governance/BOD/Priorities-FY2011.aspx)
- Bachelder, J. M., & Harkins, D. (1995). Do occupational therapists have a primary role in low vision rehabilitation? *American Journal of Occupational Therapy, 49*, 927-930.
- Beaver, K. A., & Mann, W. C. (1995). Overview of technology for low vision. *American Journal of Occupational Therapy, 49*, 913-921.
- Campion, C., Awang, D., & Ward, G. (2010). Broadening the vision: The education and training needs of occupational therapists working with people with sight loss. *British Journal of Occupational Therapy, 73*, 413-421.
- Colenbrander, A., & Fletcher, D. C. (1995). Basic concepts and terms for low vision rehabilitation. *American Journal of Occupational Therapy, 49*, 865-869.
- Crews, J. E., & Campbell, V. A. (2001). Health conditions, activity limitations, and participation restrictions among older people with visual impairments. *Journal of Visual Impairment and Blindness, 95*, 453-467.

- Dahlin Ivanoff, S., Sonn, U., & Svensson, E. (2002). A health education program for elderly persons with visual impairments and perceived security in the performance of daily occupations: A randomized study. *The American Journal of Occupational Therapy, 56*(3), 322-330.
- Eklund, K., Sjostrand, J., & Dahlin-Ivanoff, S. (2008). A randomized controlled trial of a health-promotion programme and its effect on ADL dependence and self-reported health problems for the elderly visually impaired. *Scandinavian Journal of Occupational Therapy, 15*(2), 68-74.
- Ellexson, M. (2004). Access to participation: Occupational therapy and low vision. *Topics in Geriatric Rehabilitation, 20*, 154-172.
- Lampert, J., & Lapolice, D. J. (1995). Functional considerations in evaluation and treatment of the client with low vision. *American Journal of Occupational Therapy, 49*, 885-890.
- Lamoureux, E. L., Pallant, J. F., Pesudovs, K., Rees, G., Hassell, J. B., & Keeffe, J. E. (2007). The effectiveness of low-vision rehabilitation on participation in daily living and quality of life. *Investigative Ophthalmology & Visual Science, 48*(4), 1476-1482.
- Markowitz, M. (2006). Occupational therapy interventions in low vision rehabilitation. *Canadian Journal of Ophthalmology, 41*, 340-347.
- National Center for Health Statistics. (1998). Data file documentation, National Health Interview Second Supplement on Aging, 1994. National Center for Health Statistics. Hyattsville, Maryland.



- National Eye Institute, National Institutes of Health. (2004). *Prevalence of blindness and low vision among adults 40 years and older in the United States*. Retrieved from [www.nei.nih.gov/eyedata/pbd\\_tables.asp](http://www.nei.nih.gov/eyedata/pbd_tables.asp)
- National Eye Institute, National Institutes of Health. (2009). *Eye health information: A to Z diseases and disorders*. Retrieved from [www.nei.nih.gov/health/](http://www.nei.nih.gov/health/)
- Rosenfeld, S. (2011). Vision and occupational therapy. *OT Practice*, 16(15), 7-11.
- Smith, T. M., Ludwig, F., Anderson, L. T., & Copolillo, A. (2009). Engagement in occupation and adaptation to low vision. *Occupational Therapy in Health Care*, 23, 119-133.
- University of Alabama at Birmingham. (2011). *Low vision rehabilitation graduate certificate occupational therapy*. Retrieved from [www.uab.edu/ot/low-vision-rehabilitation-graduate-certificate](http://www.uab.edu/ot/low-vision-rehabilitation-graduate-certificate)
- U.S. Department of Health and Human Services. (2011). *Vision*. Retrieved from [www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=42#seven](http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=42#seven)
- Warren, M. (1995). Including occupational therapy in low vision rehabilitation. *American Journal of Occupational Therapy*, 49, 857-860.
- Watson, G. (2001). Low vision in the geriatric population: Rehabilitation and management. *Journal of the American Geriatric Society*, 49, 317-330.

## Appendix

**Current Trends in Occupational Therapy Low Vision Rehabilitation**

University of Puget Sound  
Occupational Therapy Program

As cited in the Occupational Therapy Practice Guidelines for Adults with Low Vision, Orr (1992) defined low vision as "... a visual impairment severe enough to interfere with successful performance of activities of daily living (ADLs) but allowing some useable vision."

**DIRECTIONS: In the following section, please mark the appropriate blank with an X or check mark.**

1. Are you a registered and/or licensed occupational therapist currently treating an adult client with low vision or who has treated an adult client with low vision within the last year?  
 Yes     No

If you answered "**No**" to question #1, please **stop** at this point and **RETURN YOUR SURVEY** in the provided return envelope. This will assist the primary researcher in keeping track of response rates. Thank you for your participation.

If you answered "**Yes**" to question #1, please continue with the remainder of the survey.

---

**DEMOGRAPHIC INFORMATION**

**DIRECTIONS: For the following section, please mark the appropriate blank with an X or check mark, unless otherwise specified.**

2. What degree did you obtain upon entering the profession of occupational therapy?  
 Bachelor's     Master's     Doctoral
3. What is your highest academic degree?  
 Bachelor's     Master's     Doctoral     Other (specify): \_\_\_\_\_

Please specify the highest academic degree field, if not occupational therapy: \_\_\_\_\_

4. How many years have you been working as a registered and/or licensed occupational therapist?  
**Please write the exact number of years on the blank** \_\_\_\_\_

5. What is your current primary practice setting? **Select only one.**

- |  |   |
|--|---|
| <input type="checkbox"/> Acute Care Hospital               | <input type="checkbox"/> Free-standing Outpatient |
| <input type="checkbox"/> Inpatient Acute Rehabilitation    | <input type="checkbox"/> Home Health              |
| <input type="checkbox"/> Sub-acute Rehabilitation Facility | <input type="checkbox"/> Community-based Program  |
| <input type="checkbox"/> Skilled Nursing Facility          | <input type="checkbox"/> Private Practice         |
| <input type="checkbox"/> Hospital-based Outpatient         | <input type="checkbox"/> Other (specify):_____    |

6. In what region of the U. S. do you currently practice in your primary practice setting?

- Northwest (AK, CO, HI, ID, MT, OR, UT, WA, WY)  
 Southwest (AZ, CA, NM, NV, OK, TX)  
 Midwest (IA, IL, IN, KS, MI, MO, MN, ND, NE, OH, SD, WI)  
 Northeast (CT, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT)  
 Southeast (AL, AR, DC, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV)

7. Did you receive information on low vision rehabilitation while in your entry-level academic program?

- Yes     No

If you answered “**No**” to question #7, please continue to **question #8**.

If you answered “**Yes**” to question #7, please answer **question #7a and then continue to question #8**.

**7a.** Please select the format of your entry-level education on low vision rehabilitation.

- Entire course devoted to the topic  
 Lecture(s) embedded within another course  
 Other (specify):\_\_\_\_\_

8. Have you taken continuing education courses that included information on low vision rehabilitation?

- Yes     No

If you answered “**No**” to question #8, please continue to **question #9**.

If you answered “**Yes**” to question #8, please answer **question #8a and then continue to question #9**.

**8a.** How many continuing education courses related to low vision have you taken in the past 3 years?

**Please write the exact number of courses on the blank**\_\_\_\_\_

9. What additional certifications do you hold? **Select all that apply.**

- Specialty Certification in Low Vision  
 Low Vision Rehabilitation graduate certificate  
 Certified Low Vision Therapist  
 Gerontology Board Certification  
 Specialty Certification in Environmental Modification  
 Assistive Technology Professional  
 Other (specify): \_\_\_\_\_  
 None

---

**INFORMATION ABOUT THE CLIENTS YOU TREAT**

**DIRECTIONS: For the following section, please mark the appropriate blank with an X or check mark, unless otherwise specified.**

10. Are the majority of the adult clients you treat for low vision originally referred with a specified/identified low vision concern?

Yes     No

11. What percentage of the adult clients you treat for low vision come into your clinic with a specified/identified low vision concern? **Write the percentage below.**

\_\_\_\_\_ %

12. What diagnoses do your adult clients have that contribute to their low vision?

**Select all that apply.**

- |   |   |
|---|---|
| <input type="checkbox"/> Diabetic Retinopathy | <input type="checkbox"/> Retinitis pigmentosa   |
| <input type="checkbox"/> Glaucoma             | <input type="checkbox"/> Cataract               |
| <input type="checkbox"/> Macular Degeneration | <input type="checkbox"/> Other (specify): _____ |

13. Approximately how many individual adult clients with low vision do you treat in a month? **Please write the approximate number on the blank** \_\_\_\_\_

14. What is the predominant gender of the adult clients with low vision you treat?

Male             Female

15. What is(are) the predominant living situation(s) of the adult clients with low vision you treat? **Select all that apply.**

- |  |  |
|--|--|
| <input type="checkbox"/> Private home living independently | <input type="checkbox"/> Private home with caregiver |
| <input type="checkbox"/> Independent living/senior housing | <input type="checkbox"/> Assisted living             |
| <input type="checkbox"/> Adult family home                 | <input type="checkbox"/> Long term care              |
| <input type="checkbox"/> Other (specify): _____            |  |

---

**EVALUATION FOR LOW VISION**

**DIRECTIONS:** For the following section, please mark the appropriate blank with an X or check mark. Please keep the definition of functional visual assessment as defined by Watson (see below) in mind when answering questions #16 - #19.

A **functional visual assessment**, as defined by Watson (2001), includes the assessment of the following items:

- Functional visual acuities
- Functional visual fields
- Color/contrast discrimination
- Ocular-motor skills
- Lighting
- Use of visual & non-visual cues
- Performance of ADLs & IADLs that are affected by vision

**16.** How often do you include a **functional visual assessment** (as defined above) for an adult client with low vision?

Never       Occasionally       Frequently       Always

**17.** When you do include a **functional visual assessment** (as defined above), how often do you perform the assessment in his or her current living environment?

Never       Occasionally       Frequently       Always

**18.** Please indicate which assessment tools you use during the **functional visual assessment** (as defined above). **Select all that apply.**

<input type="checkbox"/> Bailey-Lovie Chart	<input type="checkbox"/> Lea Acuity Chart
<input type="checkbox"/> Lea Symbols Test	<input type="checkbox"/> Lea Numbers Low Contrast Test
<input type="checkbox"/> ETDRS Acuity Chart	<input type="checkbox"/> MNRead Acuity Chart
<input type="checkbox"/> Pepper Visual Skills for Reading	<input type="checkbox"/> Pelli-Robson Chart
<input type="checkbox"/> Bailey Glare Test	<input type="checkbox"/> Amsler Grid
<input type="checkbox"/> SKILL Chart	<input type="checkbox"/> BiVABA
<input type="checkbox"/> Morgan Low Vision Reading Comprehension Assessment Test	
<input type="checkbox"/> Other (specify): _____	

**DIRECTIONS:** For questions #19 & #20 mark an X or check mark in the appropriate box for each line item under both “Knowledge” & “Confidence” using the given key.

19. How would you rate your level of knowledge and confidence about the following aspects of the visual system and the **functional visual assessment** (as defined above)?

**KEY**

1	2	3	4	5
No Knowledge No Confidence	Some Knowledge Some Confidence	Reasonable Knowledge Reasonable Confidence	High Knowledge High Confidence	Very High Knowledge Very High Confidence

	Knowledge					Confidence				
	1	2	3	4	5	1	2	3	4	5
<b>Basic optics of the eye</b>										
<b>Functional visual acuities</b>										
<b>Functional visual fields</b>										
<b>Color/contrast discrimination</b>										
<b>Oculo-motor skills</b>										
<b>Lighting</b>										
<b>Performance of ADL &amp; IADL</b>										

**INTERVENTION FOR LOW VISION**

20. How would you rate your level of knowledge and level of confidence in your own abilities on each of the following treatment interventions for low vision?

**KEY**

1	2	3	4	5
No Knowledge No Confidence	Some Knowledge Some Confidence	Reasonable Knowledge Reasonable Confidence	High Knowledge High Confidence	Very High Knowledge Very High Confidence

	Knowledge					Confidence				
	1	2	3	4	5	1	2	3	4	5
<b>Environmental Adaptations</b> Use of contrast, illumination & patterns										
<b>Compensatory Techniques</b> Use of another sensory system to compensate										
<b>Assistive Technology &amp; Equipment</b> Magnifiers, signature guides, Braille devices, etc.										
<b>Community Mobility</b> Use of public transportation										
<b>Driving Evaluation &amp; Training</b>										

**DIRECTIONS: In the following section, please mark the appropriate blank with an X or check mark.**

**21.** Which areas of ADL/IADL are addressed in your intervention with adult clients with low vision? **Select all that apply.**

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Self care              | <input type="checkbox"/> Meal preparation    | <input type="checkbox"/> Home management       |
| <input type="checkbox"/> Shopping               | <input type="checkbox"/> Money management    | <input type="checkbox"/> Community activities  |
| <input type="checkbox"/> Driving                | <input type="checkbox"/> Ambulation/Mobility | <input type="checkbox"/> Socialization         |
| <input type="checkbox"/> Leisure                | <input type="checkbox"/> Fall prevention     | <input type="checkbox"/> Medication management |
| <input type="checkbox"/> Computer use           | <input type="checkbox"/> Leisure Reading     | <input type="checkbox"/> Informational Reading |
| <input type="checkbox"/> Other (specify): _____ |  |  |

**22.** On average, how much time is devoted to low vision rehabilitation in one session?

- 0-25%       26-50%       51-75%       76-100%

**23.** As the primary interventionist, how often do you refer adult clients with low vision to other specialists due to visual impairment?

- Never       Occasionally       Frequently       Always

If you answered “**Never**” to question #23, please continue to **question #24**.

If you answered “**Occasionally, Frequently or Always**” to question #23, please **select all the specialists** to which you have referred clients with low vision, and then **continue to question #24**.

- |   |  |
|---|--|
| <input type="checkbox"/> Ophthalmologist        | <input type="checkbox"/> Orientation & Mobility Specialist |
| <input type="checkbox"/> Optometrist            | <input type="checkbox"/> Driver Rehabilitation Specialist  |
| <input type="checkbox"/> Other (specify): _____ |  |

**24.** Are you part of a low vision rehabilitation team?

- Yes       No

If you answered “**No**” to question #24, please continue to **question #25**.

If you answered “**Yes**” to question #24, please answer **question #24a** and then **continue to question #25**.

**24a.** Please indicate the disciplines that are included in your low vision rehabilitation team. **Select all that apply.**

- |  |   |
|--|---|
| <input type="checkbox"/> Optometrist                       | <input type="checkbox"/> Ophthalmologist        |
| <input type="checkbox"/> Orientation & Mobility Specialist | <input type="checkbox"/> Physical Therapist     |
| <input type="checkbox"/> Psychiatrist/Psychologist         | <input type="checkbox"/> Social Worker          |
| <input type="checkbox"/> Vocational Counselor              | <input type="checkbox"/> Other (specify): _____ |

25. Do you ever provide low vision intervention in a group setting, with multiple clients?  
 Yes     No

If you answered “**No**” to question #25, please continue to **question #26**.

If you answered “**Yes**” to question #25, please answer **question #25a and then continue to question #26**.

- 25a. On average, what percentage of the overall low vision intervention is provided in a group setting?

0-25%                       26-50%                       51-75%                       76-100%

26. How often do you provide education on low vision and low vision rehabilitation to the adult client’s family or caregivers?

Never                       Occasionally                       Frequently                       Always

If you answered “**Never**” to question #26, please continue to **question #27**.

If you answered “**Occasionally, Frequently or Always**” to questions #26, please **indicate below how the education is provided** to family and caregivers. **Select all that apply**. Then **continue to question #27**.

Verbal                       Written/handout                       Demonstration  
 Other (specify): \_\_\_\_\_

27. How would you rate the overall effectiveness of the available treatment interventions (*Environmental adaptations, compensatory techniques, assistive technology & equipment, community mobility, driving evaluation & training*) for adult clients with low vision?

Ineffective                       Neither Ineffective nor Effective                       Effective

28. Do you feel you have adequate tools, resources and knowledge to provide effective low vision rehabilitation?

Yes     No

If you answered “**Yes**” to question #28, the survey is complete. **Please place the completed survey in the enclosed return envelope and return to the University of Puget Sound**.

If you answered “**No**” to question #28, please answer **question #28a on next page**.



**28a.** What do you feel is needed to improve the effectiveness of your treatment for clients with low vision? **Select all that apply.**

Additional Training/Education on:

- Basic optics of the eye
- Functional visual fields
- Oculo-motor skills
- Environmental adaptations
- Assistive technology/equipment
- Driving evaluation & training
- Other (specify): \_\_\_\_\_
- Functional visual acuities
- Color/contrast discrimination
- Lighting
- Compensatory techniques
- Community mobility
- Assessment tools

ADDITIONAL COMMENTS:

Thank you for your participation in this survey for the study,  
*Current Trends in Occupational Therapy Low Vision Rehabilitation.*

## UNIVERSITY *of* PUGET SOUND

Est. 1888

**Please place the completed survey in the enclosed return envelope and RETURN to:**

University of Puget Sound  
Occupational Therapy Program  
1500 N. Warner St. #1070  
Tacoma, WA 98406-9980

Table 1

*Primary Practice Setting of Respondents*

---

Practice Setting	Number of Respondents (%) (n = 58)
Skilled Nursing Facility	18 (31.0)
Acute Care Hospital	7 (12.1)
Inpatient Acute Rehabilitation	7 (12.1)
Home Health	6 (10.3)
Sub-acute Rehabilitation Facility	5 (8.6)
Other	5 (8.6)
Hospital-based Outpatient	3 (5.2)
Community-based Program	2 (5.2)
Free-standing Outpatient	1 (1.7)
Private Practice	1 (1.7)

---

Table 2

*Low Vision Assessment Tools Used by Respondents*

Assessment Tool	Number of Respondents (%) ( <i>n</i> = 58)
No Response	17 (29.3)
Other	9 (22.0)
SKILL Chart	6 (14.6)
Lea Acuity Chart	6 (14.6)
BiVABA	5 (12.2)
Lea Numbers Low Contrast Test	4 (9.8)
MNRead Acuity Chart	4 (9.8)
ETDRS Acuity Chart	4 (9.8)
Pepper Visual Skills for Reading	3 (7.5)
Lea Symbols Test	3 (7.3)
Morgan Low Vision Reading Comprehension Assessment Test	2 (4.9)
Bailey-Lovie Chart	2 (4.9)
Pelli-Robson Chart	1 (2.4)
Amsler Grid	1 (1.7)
Bailey Glare Test	0 (0)

Table 3

*Mean Difference in Knowledge and Confidence Rating of Functional Visual Assessment**Items*

Category	Mean
Basic optics of eye	.17
Functional visual acuities	.17
Functional visual fields	.17
Color/contrast discrimination	.17
Oculo-motor skills	.13
Performance of ADL & IADL	.13
Lighting	-.02

*Note.* A negative difference between the knowledge and confidence rating indicated the respondent may be over confident regarding that topic, whereas a positive difference indicated a possible lack of reported confidence based on the reported knowledge. A difference of zero indicated the respondent's confidence was commensurate with their knowledge.

Table 4

*Mean Difference in Knowledge and Confidence Rating of Treatment Interventions*

---

Category	Mean
Driving evaluation & training	.27
Community mobility	.20
Assistive technology & equipment	.18
Compensatory techniques	.13
Environmental modifications	.05

---

*Note.* A negative difference between the knowledge and confidence rating indicated the respondent may be over confident regarding that topic, whereas a positive difference indicated a possible lack of reported confidence based on the reported knowledge. A difference of zero indicated the respondent's confidence was commensurate with their knowledge.

Table 5

*ADL and IADL Addressed in Intervention for Low Vision*

ADL/IADL	Number of Respondents (%) (n = 58)
Self care	56 (96.6)
Fall prevention	48 (82.8)
Meal preparation	48 (82.8)
Home management	45 (77.6)
Ambulation/mobility	44 (75.9)
Medication management	41 (70.7)
Leisure	34 (58.6)
Money management	34 (58.6)
Leisure reading	31 (53.4)
Computer use	28 (48.3)
Socialization	23 (39.7)
Informational reading	23 (39.7)
Community activities	17 (29.3)
Shopping	17 (29.3)
Driving	6 (10.3)

Table 6

*Areas of Additional Training Reportedly Needed to Improve Effectiveness of Treatment*

Topic	Number of Respondents (%) (n = 37)
Assessment Tools	32 (86.5)
Functional Visual Acuities	23 (62.2)
Assistive Technology & Equipment	23 (62.2)
Oculo-motor Skills	22 (59.5)
Functional Visual Fields	22 (59.5)
Environmental Adaptations	20 (54.1)
Basic Optics of the Eye	20 (54.1)
Community Mobility	18 (48.6)
Compensatory Techniques	18 (48.6)
Color/contrast Discrimination	18 (48.6)
Driving Evaluation & Training	17 (45.9)
Lighting	15 (40.5)
Other	1 (2.7)

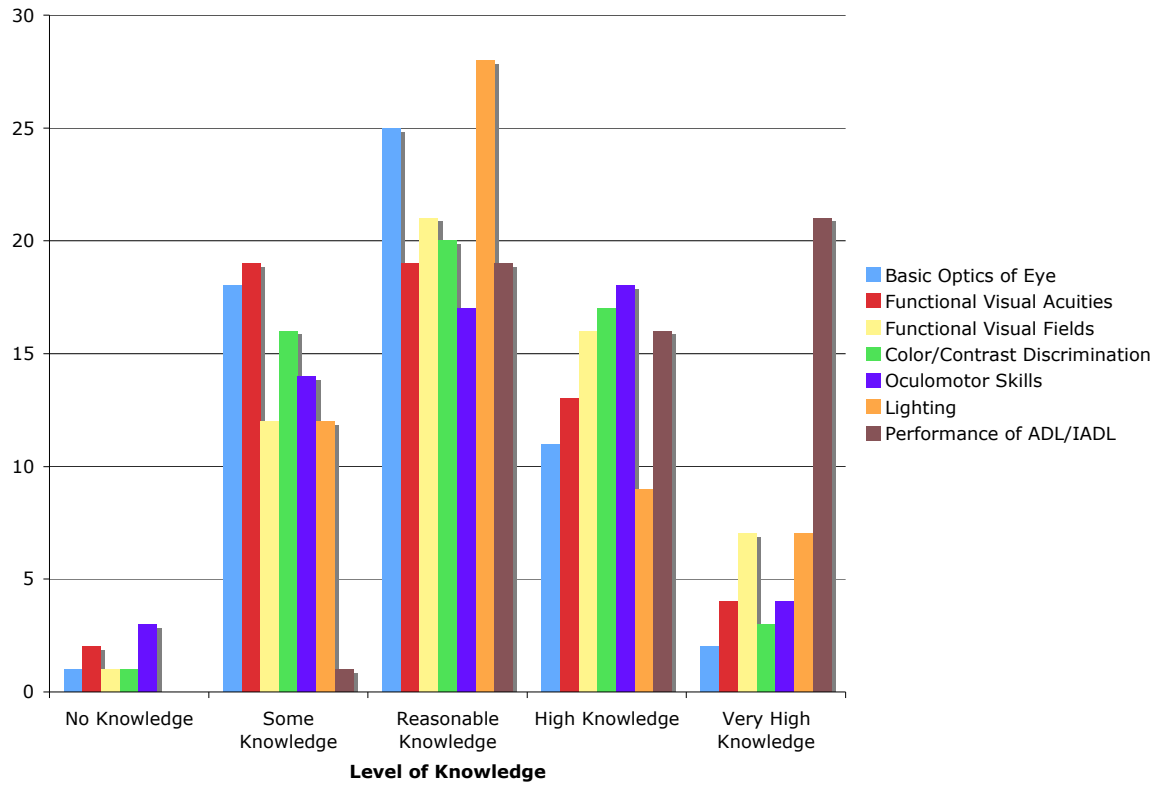


Figure 1. Frequency of responses for level of knowledge relating to parts of the functional visual assessment.



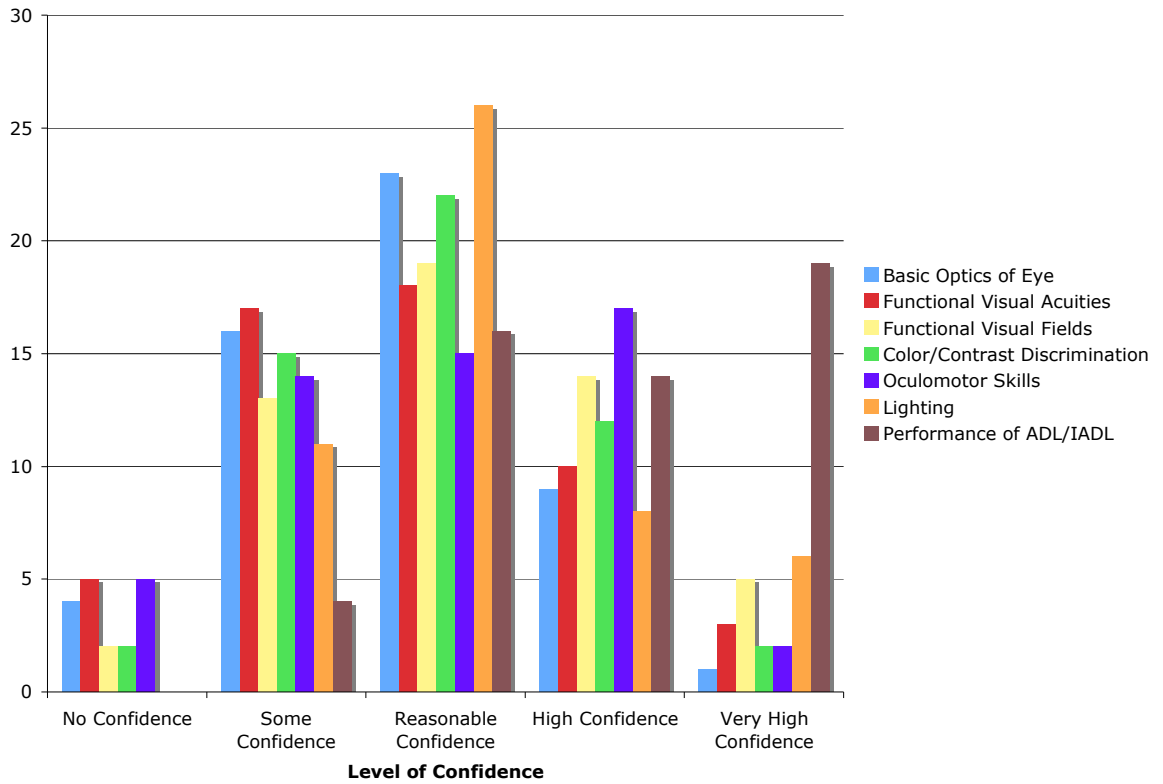


Figure 2. Frequency of responses for level of confidence relating to parts of the functional visual assessment.

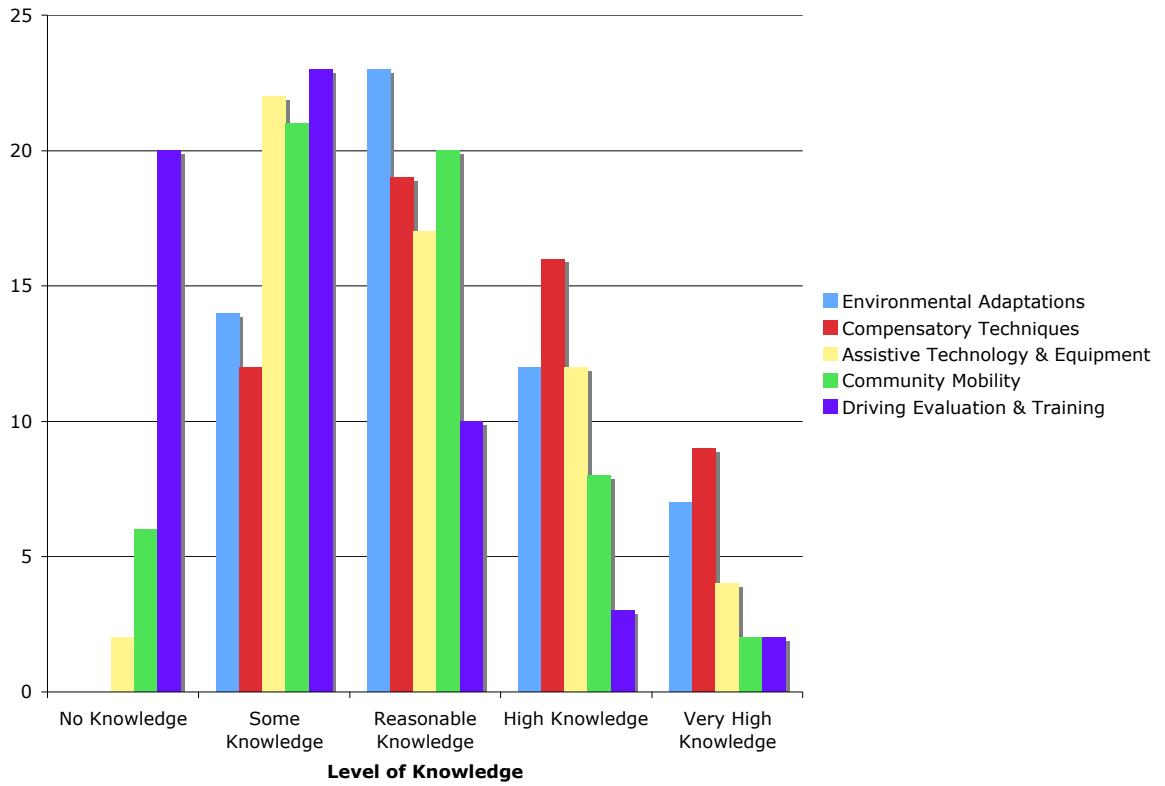


Figure 3. Frequency of responses for level of knowledge relating to treatment intervention strategies.

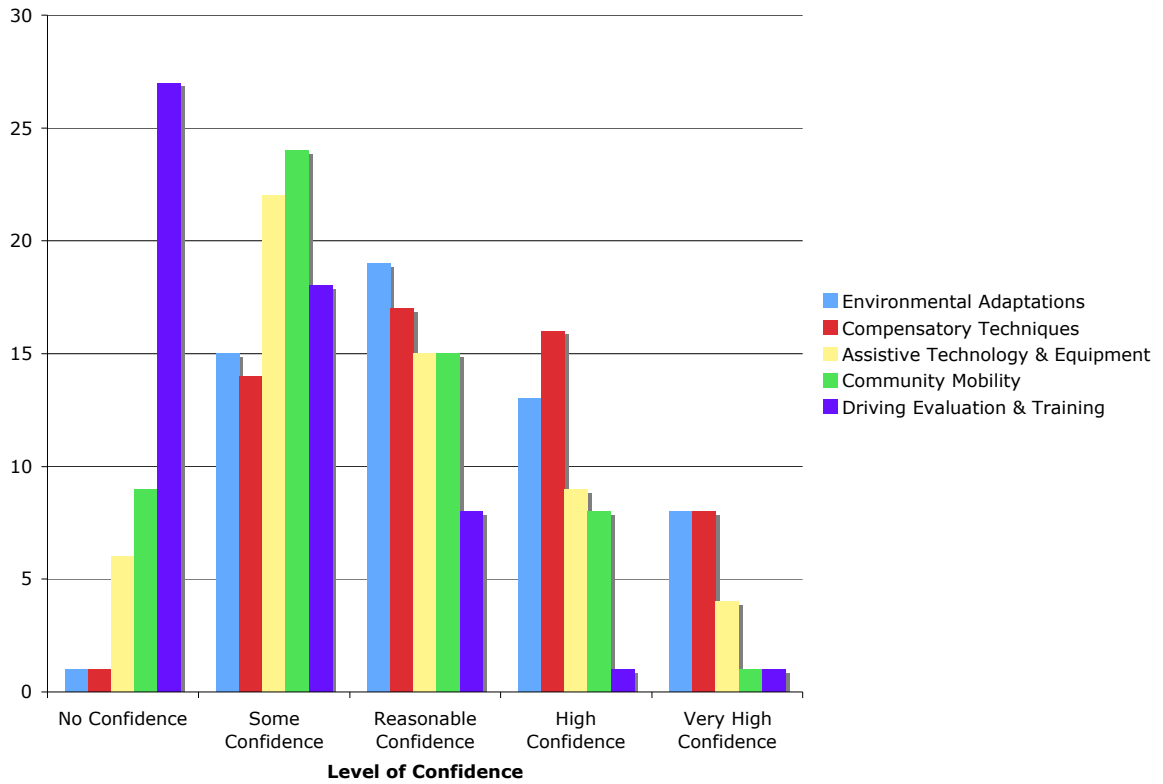


Figure 4. Frequency of responses for level of confidence relating to treatment intervention strategies.