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The Effects of Education with Healthcare Providers on Low Vision Assistive Devices and their Ability to Improve Self-Care Skills

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THE EFFECTS OF EDUCATION WITH HEALTHCARE PROVIDERS ON LOW VISION
ASSISTIVE DEVICES AND THEIR ABILITY TO IMPROVE SELF-CARE SKILLS

Presented in Fulfillment of the
Requirements for the Degree of
Doctor of Occupational Therapy

Eastern Kentucky University
College of Health Sciences
Department of Occupational Science and Occupational Therapy

Lora L. Jester-Rains
2022

**EASTERN KENTUCKY UNIVERSITY
COLLEGE OF HEALTH SCIENCES
DEPARTMENT OF OCCUPATIONAL SCIENCE AND OCCUPATIONAL
THERAPY**

This project, written by Lora L. Jester-Rains under direction of Dr. Allen Keener, Faculty Mentor, and approved by members of the project committee, has been presented and accepted in partial fulfillment of requirements for the degree of

DOCTOR OF OCCUPATIONAL THERAPY

CAPSTONE COMMITTEE



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**EASTERN KENTUCKY UNIVERSITY
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Certification

We hereby certify that this Capstone project, submitted by Lora L. Jester-Rains, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the project requirement for the Doctor of Occupational Therapy degree.


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5-13-2022

Date

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Executive Summary

Background: Results of a study by Casten et al., (2005) confirmed low rates of use of devices and services for low vision by the older adult. Older adults with low vision are receptive to using low vision resources but are often unaware of them (Lighthouse International, 2021). Casten et al. (2005) further suggested that the lack of services or use of devices may be due to a lack of awareness of health care professionals. Low vision assistive devices (LVAD), whether high or low tech, or mainstream, can help maximize a client's vision so that they can perform everyday tasks more easily and with less frustration (Duffy, 2017) and increase the likelihood of being able to age in place.

Purpose: The purpose of this research was to educate practitioners on the effectiveness of interventions and pieces of assistive technology within the occupational therapy scope of practice to improve performance in daily activities at home for older adults with low vision.

Theoretical Framework: This capstone was supported by the Adult Learning theory and The Conceptual Model of Occupational Therapy in Low Vision (Schoessow, 2010). These theories interact equally to support education on LVAD so that a person with low vision can function as independently as possible.

Methods: This project was designed and implemented to provide professional development on current LVAD and local community resources to home health practitioners to increase their knowledge. The project was completed through a professional development module to inform practitioners of the most current best practices to help those with low vision remain as independent as possible with self-care skills in the home and community environments. Before and after the professional development module, pre and post survey data were collected to evaluate the participants' knowledge level of identification of low vision client's and the use of LVAD and resources and determine the change in their knowledge after the module. The goal of the professional development in-service was to not only increase the participants' knowledge of LVAD and resources but also to reinforce occupational therapy's role with this population.

Results: This capstone project was conducted with eleven healthcare practitioners to provide education on LVAD, interventions and resources to healthcare practitioners with focus on the home care setting. Quantitative analysis of the data revealed that the objectives of the study were met. Mean scores improved from the pre to posttest, where pre-test questions ranged from 1.82 to 2.91 and the post-test questions ranged from 3.73 to 4.45, for an average of 2.14 or 42.8%. The participant responses to the open-ended questions were positive and indicated understanding and growth in realm of LVAD, interventions, and resources. Based on these findings, the educational presentation provided to home healthcare clinicians was found to increase home care clinicians' knowledge of LVAD, interventions and resources.

Conclusion: This researcher found evidence connecting this study to the past literature involving LVAD, interventions and resources. The capstone objectives were met by the participants' demonstration of knowledge and perceptions and finally educating practitioners about the realm of low vision. This capstone helps to fill a gap in the literature involving the need for greater education on low vision.

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**EASTERN KENTUCKY UNIVERSITY
COLLEGE OF HEALTH SCIENCES
DEPARTMENT OF OCCUPATIONAL SCIENCE AND OCCUPATIONAL THERAPY**

CERTIFICATION OF AUTHORSHIP

Submitted to: Dr. Allen Keener

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Title of Submission: The Effects of Education with Healthcare Providers on Low Vision Assistive Devices and Their Ability to Improve Self-Care Skills

Certification of Authorship: I hereby certify that I am the author of this document and that any assistance I received in its preparation is fully acknowledged and disclosed in the document. I have also cited all sources from which I obtained data, ideas, or words that are copied directly or paraphrased in the document. Sources are properly credited according to accepted standards for professional publications. I also certify that this paper was prepared by me for this purpose.

Student's Signature: Lora L. Rains, OTD, M.S., OTR

Date of Submission: May 11, 2022

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Section One: Nature of Project and Problem Identification

Introduction

Low vision can be described as vision that cannot be corrected medically, surgically, or by refractive means (Morse et al., 2010). Low vision is a term used to describe significant visual impairment that cannot be corrected fully with glasses, contact lenses, medication, or eye surgery. It includes loss of best corrected visual acuity, (BCVA) to worse than 20/70 in the better eye. Legal blindness is defined as 20/200 or worse in the better eye, with the best possible vision correction in place (Segre, 2019). According to the Centers for Disease Control and Prevention (CDC) in 2020, visual impairment and blindness are among the ten most common disabilities in the United States. Psychosocial issues can be experienced by adults who suffer from loss of vision (Fok et al., 2011). Fok and colleagues identified some of these issues as an impact on social interactions, abandoned activities, loss of independence and spontaneity, need for increased effort to complete activities and the affect the physical functioning of a person by reducing their ability to perform activities of daily living (ADL), instrumental activities of daily living (IADL), and reduction of safety in functional mobility. In 2015, 1.02 million people were considered blind, and approximately 3.22 million people in the United States had vision impairment (CDC, 2020). By 2050, the prediction is that these numbers could double with no definitive reason given. The major eye diseases among people aged 40 years and older are cataract, diabetic retinopathy, glaucoma, and age-related macular degeneration. The prevalence of blindness and vision impairment increases rapidly with the age among all racial and ethnic groups, particularly after age 75 (Prevent Blindness America, 2002). The World Health Organization (WHO, 2022) estimated that globally approximately one billion people need at least one assistive device but only one in ten have access to assistive technology (AT).

Occupational therapy (OT) has the potential to impact ADL and IADL performance at home in older adults with low vision and AT does have an impact on the abilities of those individuals. Educating practitioners through identification of the effectiveness of interventions and pieces of assistive technology is within the occupational therapy scope of practice to “maintain, restore, and improve performance in daily activities at home for older adults with low vision” (Liu et al., 2013).

Low Vision

Age-related low vision is considered a progressive condition. There are numerous forms of technology available, however, clients and professionals are not always aware of the products and how to use them. Lui et al. (2013) indicated that due to the increasing older adult population, the demand for low vision occupational therapy rehabilitation services is expected to increase. The American Occupational Therapy Association (AOTA) also recognized low vision services as an emerging practice. Healthy People 2020 further supported the objective of increasing the nation’s vision health by identifying the need to support the use of assistive and adaptive devices to increase the use of vision rehabilitation services (Health People, 2020).

Assistive Devices

In a systematic review (Jutai et al., 2009) the authors found that assistive technology was effective in improving a client's level of independence or quality of life. However, the study also indicated a need for more research on the topics of effectiveness of vision rehabilitation devices and performance measures. Chiung-Ju, et al. (2013), conducted a review on adults with age-related vision loss to determine if assistive technology and/or environmental interventions can improve a client's independence level in the home care setting. They found that the use of low

vision assistive devices in the home environment could slow the functional decline of home care clients and reduce institutional and in-home personnel costs (Chiung, Ju et al., 2013).

Education

Results of a study by Casten et al., (2005), confirmed low rates of use of devices and services for low vision by the older adult. Older adults with low vision are receptive to using low vision resources but are often unaware of them (Lighthouse International, 2021). Casten et al. (2005) further suggested that the lack of services or use of devices may be due to a lack of awareness of health care professionals. Low vision assistive devices (LVAD), whether high or low tech, mainstream, or assistive technology, can help maximize a client's vision so that they can perform everyday tasks more easily and with less frustration (Duffy, 2017). Not having these assistance devices could cause an individual to decline in his or her ability to live independently. However, if professionals and clients are not aware of the LVAD available, then the clients cannot capture the benefits of the devices. Professionals require training to improve their awareness of availability of LVAD and other low vision-related resources so that they can provide better services.

In a systematic review Jutai et al. (2009) found that AT was effective in improving a client's level of independence or quality of life. However, the study also indicated a need for more research on the topics of effectiveness of vision rehabilitation devices and performance measures. Chiung-Ju, et al.(2013), conducted an evidence-based review based on adults with age-related vision loss to determine if AT and/or environmental interventions can improve a client's independence level in the home care setting. The results of this study indicated that the use of LVAD in the home environment could slow the functional decline of home care clients and reduce institutional and in-home personnel costs (Chiung-Ju et al., 2013).

The studies identified address some type of AT in association with the visually impaired or those with low vision, not all studies addressed the affect assistive technology have in the home care setting. Jutai et al., (2009) emphasized the fact that some clients are more receptive to the use of assistive technology or adaptive devices if they are trained on their use and have an understanding or their benefit. Mann et al., (1999) discussed the benefit of use of AT or adaptive devices within the home setting. Dahlin-Ivanoff & Sonn (2009) found that the use of assistive devices helps to maintain or decrease the decline of self-care skills and IADLs and outline the positive impact occupational therapists have on supporting the needs of those with low vision.

However, if LVAD are to be effective in assisting clients with performing ADLs and IADLs within the home, home health practitioners must be cognizant of low vision device options and resources. Learning new knowledge helps practitioners optimize their service and intervention with clients. Passmore (2021) stated that new knowledge should be learned as the professional discipline changes with advancements in technology and practice. Education at the adult level helps practitioners keep up with changes in the world, (Looker, 2018).

The principles of Adult Learning Theory will help to support the type of learning required to achieve the goal of this capstone (Blondy, 2007), making this training effective and a commodity in which adult home healthcare providers will want to participate.

Problem Statement

Low vision assistive devices can help maximize a client's vision so that they can perform self-care tasks and improve or maintain their current level of independence. Many home health practitioners may not be aware of the availability of LVAD or the most current resources available. Therefore, home health practitioners may require additional education on LVAD and resources to improve their awareness of availability of LVAD or resources. It is imperative to

provide intervention with assistive devices earlier in the disablement process to slow the progression of decline, as persons with visual impairment are at high risk of developing disability (Dahlin-Ivanoff, 2004).

Purpose of the Project

Although age-related vision loss is irreversible, the process of decreasing low vision disability in older adults with low vision can be slowed. Visual disability can be defined as a visual impairment that affects a person's vision and creates difficulties in participation in self-care, leisure, and social activities for older adults (Nastasi, 2020). Lui et al. (2013) suggested that occupational therapy has the potential to help maintain, restore, or improve ADL and IADL performance of older adults with low vision through use of compensatory techniques, visually assisted equipment, and low vision training in the home setting. Occupational therapy has the potential to maintain, restore, or improve ADL and IADL performance at home in older adults with low vision and AT does have an impact on the abilities of those individuals. Therefore, the purpose of this capstone was to educate practitioners by identifying the effectiveness of interventions and AT to maintain, restore, and improve performance in daily activities at home for older adults with low vision.

This Capstone project was conducted to educate home health practitioners on availability of low vision devices for the home along with local resources. The project was to design and deliver a professional development in-service related to low vision and LVAD designed for healthcare providers working in the home setting. Participant knowledge was assessed through pre and post testing.

Project Objectives

1. To improve home health practitioners' knowledge and use of LVAD with patients within the home environment.
2. To improve home health personnel knowledge about low vision assistive devices and local resources for patient related for low vision.
3. To determine home health practitioners' perceptions regarding intervention using AT to improve a low vision patient's independence and safety in the home environment.

Theoretical Framework

The capstone project was best supported by the Adult Learning theory. This theory is directed at the aspect of making education and training effective and something that adults find to be valuable (Knowles, 1990). According to Knowles the assumptions that adult learning is self-motivated and is most relevant when the topic is applicable to some aspect of their life. Knowledge of technological advances and treatment approaches is essential to optimize treatment and improve interventions for clients. Knowles (1990) also proposed the assumptions that adult learning is self-motivated and is most relevant when the topic is applicable to some aspect of their life.

The Conceptual Model of Occupational Therapy in Low Vision (Schoessow, 2010) also supported this project. This theory emphasizes the need for physical ability along with the use of technology and compensations to enable the person with visual impairment to function as independently as possible within the home and community settings (Schoessow, 2010). These theories interact equally to support education on LVAD so that a person with low vision can function as independently as possible.

Significance of the Study

There is an apparent gap in the literature regarding the benefits of education regarding LVAD, interventions and resource training for home health practitioners by OT. The benefit of increased LVAD use and client/provider education will support the AOTA Vision 2025 guidepost of collaboration. Collaboration involves working with clients to produce effective outcomes (AOTA, 2020). Occupational therapists can teach older adults and their peers how to help clients use their remaining vision through compensatory techniques and accommodations to perform activities of daily living and instrumental activities of daily living at their maximum level of independence and safety. Helping clients meet these basic needs also increases our profession's recognition as a positive influence within society. Occupational therapists can demonstrate their leadership abilities by bringing the need for change in Medicare and Medicaid policies to the attention of lawmakers by supporting funding of LVAD as durable medical equipment. Occupational therapists can continue to collaborate with other professions to bring about optimal outcomes within the therapy setting by educating these professionals on how visual deficits affect a client's ability to perform self-care and home management skills. We can continue to provide services by identifying the need for customized services, adaptations, and use of accessibility features help to enhance services for those with low vision. Occupational therapists will continue to demonstrate equality, inclusion, and the observance of cultural differences and diversity within every therapy interaction recognizing the need for adaptations within service delivery within our occupation.

This program supported the overarching goal of Healthy People 2020 of “promoting quality of life, healthy development, and healthy behaviors across all life stages” (Healthy People, 2020). It would also support the AOTA Vision 2025 principle that “occupational therapy

maximizes health, well-being, and quality of life for all people, populations, and communities through effective solutions that facilitate participation in everyday living” (AOTA, 2020). This Capstone supported this goal and vision because it intended to promote improved quality of life and education of home health practitioners with current low vision ideas.

This Capstone project aimed to increase practitioner knowledge of LVAD, resources, and interventions related to low vision. Upon project completion, home care practitioner knowledge and understanding of use of LVAD and resources within the home care setting will improve to benefit clients who have low vision. Past research has indicated that the greater the success of device use, the higher the client’s satisfaction (Copolillo & Teitelman, 2005). This knowledge is significant because if a client is educated on the use of a device and understands how to use it, there is a greater chance that the device will be used and therefore, less chance of device abandonment. Clients can maintain their occupations at home through multiple components and training that consist of low vision knowledge, low vision device use, problem-solving strategies, and community resources (Liu et al., 2013). Increased knowledge of interventions and LVAD can increase the ability of those with low vision to perform ADLs and IADLs at their optimal level of independence and assist them in remaining in their homes and aging in place.

Section Two: Review of the Literature

This review of literature was conducted for articles related to adult learning, assistive technology, low vision, and healthcare provider knowledge of available assistive devices and their benefits. Low vision is a visual impairment that cannot be corrected by regular eyeglasses, contact lenses, medication, or surgery, and it interferes with the ability to perform everyday activities (National Eye Institute, 2010). It is a term used to describe significant visual impairment that cannot be corrected fully with glasses, contact lenses, medication, or eye surgery. It includes loss of best-corrected visual acuity, (BCVA) to worse than 20/70 in the better eye. Legal blindness can be defined as 20/200 or

worse in the better eye, with the best possible vision correction in place (Segre, 2019). According to the Centers for Disease Control and Prevention (CDC, 2020), visual impairment and blindness are among the ten most common disabilities in the United States. Loss of vision secondarily can affect the physical functioning of a person by reducing their ability to perform activities of daily living (ADL), instrumental activities of daily living (IADL), and reduce safety in functional mobility and increased falls (CDC, 2020). Assistive technology has been used to help close the gap in loss of functional ability for those suffering from low vision (Dougherty, 2018).

Adult Learning

Adult learning theory was developed with the focus on the explanation of characteristics of adult learning and to identify the styles that best support them (Benakanahalli, 2021). Blondy (2007) found that the concepts of self-direction, learner experiences, and problem-centered learning were synonymous with the adult learning theory. Adult learning should include something the learner has a need to learn, how they will learn it, the subject of learning, and why it is important (Palis & Quiros, 2014). An adult will learn if they see value in the subject being presented (Irish, 2019). The world is constantly changing and transforming, so adults must maintain their involvement in education to keep up with the many changes in the world and ourselves (Looker, 2018). Adult education is necessary for the retraining of new skills.

Assistive Technology/Applications/Devices

Assistive technology is a forever growing, always-changing field. It is a term used for a piece of equipment or product, whether acquired commercially or customized assistive, adaptive, and rehabilitation devices used to improve or maintain the functional abilities of those with disabilities (Dougherty, 2018). Assistive technology devices can be categorized into low, inexpensive, simple, easy to make or high tech, more expensive, more complex in design, and

sometimes difficult to locate. People with disabilities often incorporate the use of assistive technology to enhance their ability to perform occupations. Technology is a fundamental entity of the OT profession and is considered a building block of OT, (Smith, 2017). In his Eleanor Clark Slagle Lecture, Smith included another term, environmental technology (ET), which is a technology that stays in the set environment and can be used by anyone within that environment. Additionally, Smith noted occupation-related technology (ORT), any technology used within the environment such as a cup, envelope, or toilet flush handle, indicating that all human occupations are technology-based.

Modern developments in assistive technology that can be useful for individuals living with low vision involve the use of new applications for smartphones and tablets along with artificial intelligence and three-dimensional printing (Kim, 2021) The use of the internet has the potential to assist those with low vision to be able to perform ADLs with increased independence, to help with coping skills for visual impairments, and to feel more included socially (Kim, 2021). Individuals were found to be more likely to adopt the technology if they assisted the individual in the areas of usability, safety, and accessibility and if they would reduce workload (Kim, 2021). Ease of use was also identified as a factor. In conclusion, Kim (2021) found that older adults with low vision were receptive to technology if they found it would the client live more independently and improve their quality of life along with improving safety, accessibility, and usability.

Low Vision Interventions

Results of a qualitative study by Teitelman and Copolillo (2005) found that the loss of ability to perform regular activities, loss of independence and spontaneity, need for increased effort to complete tasks, and influence on social relationships impacted the emotional challenges of low vision on occupation the most. Stellmack et al. (2003) identified the main categories of occupations affected by low vision as travel activities, acquiring food or shopping, household tasks, self-care tasks, and communication. To maintain their ability to perform activities of daily living, those with low vision need knowledge of assistive devices and the ability to use them. Practitioners must be knowledgeable of the devices and have the ability to teach these skills. The interventions should include the general low vision knowledge, low vision device uses problem-solving strategies, and community resources, (Lui et al., 2013). Assistive technology devices can be categorized into low, inexpensive, simple, easy to make or high tech, more expensive, more complex in design, and sometimes difficult to locate. The table below lists some examples of low vision assistive technology according to these categories.

Table 1: Low vision assistive technology by category

Low Tech	High Tech
Felt-tip markers	Electronic magnifier
Large grip pen or pencil	Specialized computer software
Basic magnifier	Audiobook player
Velcro dots	Computer or smartphone apps
Talking watches or clocks	Voice Activation systems
Kitchen aids-The 'Ove' Glove	AAC (augmentative and alternative communication devices)

Assistive technology interventions can also be categorized by functional intent. Jutai, et al. (2009) introduced a categorization method where devices were grouped by their level of effectiveness concerning occupational performance. This is presented in Table 2.

Table 2: Categorization of AT interventions

Mobility devices	Optical devices	Adaptive computer technologies	Mainstream technologies
Smart Phone applications	Handheld electronic magnification systems	OCR software (text to speech)	Personal computers
White canes	Closed circuit TV's	Screen magnifiers	Recreational binoculars
Night vision devices	Color filters	Scanners	DVD player/recorder
Prism or other specialty glasses			Large screen television
			Cell phone

Occupational therapy moves with technology and technology is relevant to occupation, (Smith, 2017). People with low vision require assistance whether physically from another person, manually through the incorporation of assistive technology, or adaptations of their environment. No matter what the intervention, the degree of success and level of use of the device should involve some type of teaching. Teaching could be accomplished with the client, professional, or a family member. Johnstone et al. (2009) stated the ability of a visually impaired student to be successful with the use of an assistive device depends on the availability of the recommended device and how well the individual is trained on the device. Optimally, occupational performance and client-centered outcomes should be considered when selecting a low vision technology device. Finally, for clients to receive the maximum potential for benefits

of assistive technology for low vision, a requirement is that the people who need it have access to the proper technology and know how to use the technology.

Section Three: Methods

Project Design

This project was designed and implemented to provide professional development on current LVAD and local community resources to home health practitioners to increase their knowledge of these. The project was implemented through a professional development module, delivered virtually via Microsoft Teams to educate practitioners of the most current interventions and devices available for those with low vision, along with best practices to help those with low vision remain as independent as possible. The goal of the professional development in-service was to not only increase the participant's knowledge of LVAD and resources but also to reinforce occupational therapy's role with this population. By participating in the educational session, the participants gained knowledge to improve a client with low vision's ability to take care of themselves and increase their level of safety within the home setting.

The objectives for the project are outlined at the beginning of this report. Before and after the professional development session, pre and post survey data were collected to evaluate the participants' knowledge levels and determine the change in their knowledge as a result of attending the.

A goal of the professional development in-service was to not only increase the participant's knowledge of LVAD and resources but also to reinforce occupational therapy's role within this population. By participating in the educational session, the participants will gain knowledge to improve a client with low vision's ability to take care of themselves and increase their level of safety within the home setting.

Setting

The in-service was conducted virtually with members of the East Central Region (ECR) Indiana University (IU) Health Home Care team. The team provides nursing, physical, occupational, and speech therapies, social worker, and home health aide services in the home care setting to the east central region of Indiana in an eight-county area. ECR is one of four regional settings where home health is provided in the state of Indiana. The virtual setting was selected instead of face-to-face due to current COVID-19 precautions. IU Home Health follows CDC guidelines for group gatherings.

Identification of Participants

The population for this study was voluntary attendants of the LVAD and low vision professional development educational session. Recruitment of participants occurred from a convenience sample of home health personnel from the east-central region (ECR) branch of the home health agency. Participants were recruited by advertising the professional development session via email. Participants gave their consent to participate by joining the meeting and completing the pre/post survey. Staff members had the option to attend the education without filling out the survey, thus being excluded from the study. The clinical supervisor informed participants of the session during a staff meeting or team huddle prior the educational session date. Those who wished to participate could attend and those who chose not to participate did not attend the training. The professional development session was held virtually via Microsoft Teams on February 23, 2022, and lasted approximately one hour. The participants included a

clinical supervisor, occupational therapists, physical therapists, a physical therapy assistant, registered nurses, licensed practical nurses, and a home health aide.

Educational Content

An in-service was prepared by the presenter and presented to home health personnel with the facilitation of interactive discussion. Content included but was not limited to a low vision definition, conditions that cause low vision, examples of low vision devices and their uses, therapy interventions, etiquette with low vision clients, and community resources for national, state and local levels. A question/answer open forum was encouraged throughout the presentation. Since the presentation was held virtually, questions were submitted via chat or by unmuting the microphone. The content for the presentation was based on the presenter's knowledge gained from various resources. One resource included presenter participation a sixteen week online Assistive Technology Applications Certificate Program (ATACP) through California State University at Northridge (CSUN) offering practical tools and techniques of assistive technology accommodations and applications with emphasis on the needs of individual with various disabilities in many settings. The ATACP program also addressed assistive technology tools and techniques that enhance the effectiveness of assistive technology applications. Other resources included literature reviews, analysis/feedback from OTs with expertise in low vision and assistive technology, and clinical experience.

Data Collection Methods/Outcome Measures

Data was collected prior to and following the in-service session through completion of a pre and post-session survey. The survey was conducted to measure the impact of the content of the in-service on participant knowledge. The survey was created in an online survey system

called Qualtrics for ease of distribution to the online participants. To keep the responses anonymous, the participants were asked to create their own alias or pseudonym for the survey that would be used on both the pre-survey and post-survey so that a comparison can be completed. A copy of the survey is located in Appendix A.

Data Analysis

The data was then exported from Qualtrics into a Microsoft Excel spreadsheet, then was imported into SPSS, version 27. Statistical analysis was utilized using paired *t*-tests with the question responses. This type of test was chosen because one group of participants was being measured for change at two different points in time (Salkind & Frey, 2020). *T*-tests are useful for before and after comparisons to measure the effectiveness of the education.

The hypothesis for my capstone was: The module will improve knowledge of healthcare providers. For each of the survey questions, a *t*-test was ran comparing the pretest and the post test for each of the survey questions. A one-sided *t*-test was run and found that there was a significant improvement in knowledge in each of the areas addressed by the Likert scale questions. A one-sided *t*-test was run because the hypothesis predicted that there would be a one-sided. For example, the last question asked about knowledge of occupational therapy with low vision interventions. The mean improvement from pre-test to post test was two Likert scale points on that question. The *p*-value from the *t*-test was less than 0.001, which indicates that the change in knowledge was statistically significant at the 5% significance level.

A few open-ended questions were included in the survey for informational purposes. The open-ended questions were used to gather participants perceptions of role of OT for people who have low vision, a healthcare providers knowledge/ability to provide effective interventions for clients who have needs related to low vision and/or vision assistive technology and what one

important thing the participant learned from the presentation and how they planned to implement that into their practice with patients.

Ethical Considerations

Ethical issues can arise and were considered at every level or phase in the research process (Creswell & Creswell, 2017). This researcher reviewed AOTA's Code of Ethics prior to beginning the capstone to ensure that all rules and regulations were followed. The researcher began by seeking IRB approval from Eastern Kentucky University. Approval for the project was given by the ECR home health team leader through a letter of support. Following the educational presentation, the researcher analyzed the data results given from the pre/post survey. Once the project began, the researcher disclosed the purpose of the study. Finally, the researcher considered cultural contexts for all participants along with the need for inclusion, participation, safety, and well-being (AOTA, 2020).

In addition, the following additional ethical concepts were addressed (Creswell & Creswell, 2017) along with a method to address any concerns. When analyzing data, avoidance of disclosure of only one side, such as only the positive results could be identified as an ethical issue. An easy approach to address this issue is to always report contrary or opposing findings. During the reporting, sharing, and storing data stage, an ethical issue could be a provision of proof of conformity with ethical issues and inability to identify lack of conflict. This principle applies due to the researcher's bias for the need to assist those with low vision. This researcher needs to keep a neutral option or composure about the outcomes of the research. Disclosure of all aspects of data, whether positive or negative, is necessary to address the issue. File accessibility will only be granted via an ECU issued password-protected computer and stored on the ECU managed Google Drive. No one outside the research team will have access to

the data. All electronic files will be deleted, and all physical materials will be shredded with a cross-cut shredder three years after the study closes.

Project Timeline

The Institutional Review Board (IRB) at Eastern Kentucky University approved this project. The supervisor of the East Central Region (ECR) of IU Home Health Care was initially approached on December 12 of 2021 to ask permission to complete the training. The initial Institutional Review Board application was submitted on January 18, 2022. IRB approval was received on January 31, 2022. After IRB approval, the educational session was scheduled for February 23, 2022. Survey questionnaire was developed the pre/post survey was developed in February prior to the educational presentation. The educational presentation was completed via Microsoft Teams on the morning of February 23, 2022. Following the completion of the educational in-service, this researcher received data from completed pre/post survey questionnaires via Qualtrics and the data was analyzed for results. The creation and dissemination of the Capstone was completed from March to May 2022. A timeline for the project procedures is listed in Table 3 below.

Table 3: Timeline of Project

December 2021	Obtained letter of support from ECR team leader
January 2022	IRB submission and approval
February 2022	Development of pre/post survey questionnaire
February 2022	Completion of educational in-service
March 2022	Performed data analysis
March-May 2022	Created and disseminated capstone report

Section Four: Results and Discussion

Introduction

The proposed outcome of this this capstone project was to educate home health practitioners in an east central Indiana home care of the importance of incorporation of low vision assistive technology devices, interventions, and resources into the home care environment. Implementation of these principles can aid in improvement of the low vision client's safety and ability to perform self-care skills within the home environment. An educational presentation was completed via Microsoft Teams the morning of February 23, 2022. The in-service was provided via PowerPoint to illustrate the material. A pretest was given prior to the start of the session and a posttest after the session once the presentation, discussion and questions were completed. Fourteen practitioners attended and eleven completed both pre/posttest surveys. One completed only the presurvey, one completed only the post survey and one participant completed neither pre nor post survey. Incomplete surveys were excluded from analysis.

Results of Evaluation of Project Objectives

The clinicians who participated included three registered nurses (RN), one RN who held a supervisory position, two licensed practical nurses (LPN), one physical therapy assistant (PTA), three physical therapists (PT), two occupational therapists (OT), one home health aide (HHA), and one social worker. Participants were asked to complete a pretest prior to the educational session. Some questions were answered via Likert scale and others were open ended questions. Next, the educational module was delivered to the group. Afterward, participants completed the posttest, which consisted of the same questions as the pretest so that the impact of the educational module could be assessed. Results of the pre/posttests can be found in the table

below. Participants submitted response results individually, to allow for comparison of the group as a whole but also each participant's pretest and posttest score. The statistics for each analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.

Therefore, 11 of the participants had data included out of the 14 total attendees, since three of the participants did not submit both the pretest and the posttest.

Quantitative Data

The tables below summarize the data from the participants on the pretest and the posttest. Table 4 summarizes responses to the first question designed to determine the amount of prior training related to low vision interventions or assistive technology the participants had prior to the educational session.

Table 4: Prior Training on interventions

Training received	N
Low vision training	1
Assistive technology training	1
Low vision and assistive technology training	3
No training	6

Previous formal training (N=11)

In the next section of the survey, participants were asked to rate their comfort level with several different aspects of low vision and assistive technology. For each statement, the participant was asked to rate their comfort level. The responses are tabulated in Tables 5-9.

Table 5: Participant Responses Regarding Comfort level with Low Vision and Assistive Technology

Level of knowledge	Mean	
	<u>Pre</u>	<u>Post</u>
General knowledge of low vision	2.90	4.36
Most current assistive devices and technology	2.00	3.54
Assistive technology and assistive devices specifically for low vision	2.27	3.63
Resources for low vision	1.90	3.36
Resources for assistive technology	2.90	3.72
How to teach/implement within the home setting with patients	1.81	3.72
Occupational therapy with low vision interventions	2.36	4.09

Note: Scale: Very Uncomfortable=1, slightly uncomfortable=2, neutral=3, moderately comfortable=4, very comfortable=5

Table 6: Sample participant views of the role of OT for people who have low vision

Participant	Pre-test	Post-test
A	Help with ADLs	Keeping up with technology
B	To teach them on use of Assistive device Technology	To improve their functional abilities through the use of assistive devices
C	Unknown	How to adapt their surroundings
D	Assist and educate	Assess and educate low vision patients to help with ADLs
E	ADLs	Evaluate and assist patients with ADLs and increase safety in the home
F	Help provide information and assistive device	Help with assisting pt with adaptive devices/education
G	Education for staff	Looking into resources for the patient and providing the information
H	Education, resources	Provide educational resources and safety recommendations

I	To enable return to maximum potential	To improve ability to perform self-care skills
J	To improve their ability to function within the home setting	To improve self-care skills and functional mobility
K	To help with adapting the pts environment so that pt is able to function as well as possible in their home and be as independent possible, increase pts quality of life	To improve a pts ability to care for themselves

Table 7: Sample participant statements on how to improve knowledge for treating low vision.

Participant	Pre-test	Post-test
A	Education	Doing it in the field
B	resources and training on helping patient with low vision	increase my knowledge of resources and receive further training on devices that would help someone with low vision
C	Ongoing training	Ongoing education
D	To be able to help clients in getting their need's	To be able to help patient in improving their ADLs and IADLs
E	Continues education	Continued education
F	Assist Pt more	Access resources to help assist Pt with low vision
G	Ongoing education	I would like to have a brochure to go over with the patient giving ideas of different technologies and sources that are available
H	Resources information	Contact information
I	Further training	More training
J	Look up resources	Do more research on current interventions
K	Further training on low vision and the various equipment that is currently available	Training on the most current low vision and assistive devices

Table 8: Participant years of healthcare experience

Table 8

Years of experience	N
0 – less than 5	0
5 – less than 10	2
10 – less than 15	4
15 – less than 20	1
20 or greater	4

Note: (N=11)

Table 9: Participant learning from session and plans to implement

- | | |
|---|--|
| A | Ways to implement help for my patients |
| B | The different types of low-vision for people there is. |
| C | Basics: examples of what the pt. is seeing based on their disease |
| D | Be able to help patients to improve quality of life; Was able to know resources and assistive device to help patients with low vision |
| E | Different types of low vision; Local resources available for patients with low vision |
| F | resources |
| G | How to explain; Local resources and varying equipment/technology |
| H | There is still more to learn; A better understanding of how a person with low vision sees the world. Be more conscious of their limitations. |
| I | Better understanding of assistive equipment |
| J | Adaptive devices to assist low vision Pts and some resources available to help pts at home with low vision , educational tips for pts and CG |
| I | Use local resources; Be more aware of lighting in the home more and special placement of items |
| J | I did not realize the number of items that are available for low vision patients to help with their day-to-day living, it is good to know that we can confer with OT for any questions/problems that may arise |
| K | The examples of what it is truly like with various diseases- and to place myself in the persons shoes so that there is a clearer idea on exactly what the pt needs to stay safe and as happy as possible in their environment. |
| L | How low vision affects a person's ability to take care of themselves. |

M increase my knowledge of resources and receive further training on devices that would help someone with low vision; More information on low vision and how it affects a person's ability to function, plus assistive technology and resources

Table 10 represents the information gathered from the paired t-tests about changes in participant knowledge. All changes were statistically significant.

Table 10: Paired t-test results/comparison of pretest and posttest survey questions

	Mean	SD	Std. Error Mean	95% Confidence Interval		t-value
				Lower	Upper	
How low vision conditions impact daily living	1.545	1.128	.340	.788	2.303	4.543**
Most current assistive devices and assistive technology	1.727	1.272	.384	.873	2.582	4.503**
Assistive technology and assistive devices specifically for low vision	1.636	1.206	.364	.826	2.447	4.500**
Knowledge of resources for low vision	2.000	1.549	.467	.959	3.041	4.282**
Knowledge of resources for assistive technology	2.182	1.471	.444	1.194	3.170	4.920**
How to teach/implement low vision assistive technology/ devices within the home setting with patients	2.182	1.401	.423	1.240	3.123	5.164**
Knowledge of occupational therapy with low vision interventions	2.000	1.549	.467	.959	3.041	4.282**

*Note: ** $p < .001$*

Table 11 presents the results of statistical testing that compared changes in mean scores for participants. Of note, there were positive changes following the educational session in all categories.

Table 11: Descriptive statistics comparing mean pre/post scores

Question		Mean	SD
How low vision conditions impact daily living	Pre	2.91	.944
	Post	4.45	.688
Most current AT	Pre	2.00	.775
	Post	3.73	1.104
AT specifically for low vision	Pre	2.27	.905
	Post	3.91	1.044
Resources for low vision	Pre	1.91	.831
	Post	3.91	1.221
Resources for AT	Pre	1.82	.874
	Post	4.00	1.000
Teach/implement low vision AT/within the home	Pre	1.82	.982
	Post	4.00	1.183
Knowledge of occupational therapy with low vision	Pre	2.27	1.272
	Post	4.27	1.009

Discussion/Data Analysis

Participants answered pre and post survey questions to assess the impact the module had on their knowledge of low vision and assistive technology. The questions addressed knowledge of low vision impact on daily living, of current assistive technology in general and with low vision, of low vision and assistive technology resources, of how to educate clients on use of LVAD in the home setting and the role of OT with low vision interventions. Questions were formed after a review of the literature, clinical experience, and knowledge gained from participation in the Assistive Technology Certificate program completed by the primary researcher.

The aggregate group results of the pretest and posttest are depicted in Table 11. Mean responses to the pre-test questions ranged from 1.82 to 2.91 and the post-test questions ranged from 3.73 to 4.45 indicating an increase in knowledge from the educational presentation. The mean improvement per Likert question ranged from 1.54 to 1.91. T-scores ranged from 4.282 to 5.164 indicating a large difference of between the pre and posttest survey questions . The higher the value of the t-score, indicates that a large difference exists between the two sample sets. The P-value for all Likert scale questions was found to be $< .001$ indicating that the difference between the pre and posttest very likely occurred due to something other than chance.

According to the results, practitioners improved their knowledge of LVAD, resources and interventions by an average of 2.14 or 42.8%. Arbesman et al., (2013) conducted a systematic review of literature relevant to those with low vision and its importance to Occupational Therapy practice and found that multicomponent programs involving interventions of education and exchange of information related to low vision, training in problem-solving skills and teaching the use of LVAD were effective in improving ADL and IADL performance of adults with low

vision. Teaching, along with multiple intervention strategies were noted as key components of the program. A prerequisite to teaching is acquisition. Dougherty (2018) identified that to benefit from assistive technology those with low vision must have access to it. The WHO (2022) estimated that out of one billion who need assistive technology only one in ten have access to LVAD, so by improving healthcare provider knowledge of resources, this information can be passed along to their patients who need increased access to this technology.

Analysis indicated that participants did improve in all aspects measured by the survey. The lowest improvement was in question one, general knowledge of how low vision conditions impact daily living and the highest improvement in questions five and six, knowledge of resources for assistive technology and knowledge of how to teach/implement low vision assistive technology/devices within the home setting with patients. Questions four and seven each produced a 40% improvement, knowledge of resources for low vision and knowledge of occupational therapy with low vision interventions. Questions one-general knowledge of how low vision conditions impact daily living, two-knowledge of most current assistive devices and assistive technology and three-knowledge of assistive technology and assistive devices specifically for low vision, each produced improvement of 30.8%, 34.6% and 32.8% respectively. Thus, the value of participation in the continuing education session was demonstrated.

Open-ended questions were included in the survey to gain a more in-depth understanding of the learning that occurred because of the educational module. One of the questions requested participant views of the role of OT for people who have low vision were noted in the pre and posttests. Some of the more significant examples of the responses included: “to help with adapting the pts environment so that pt is able to function as well as possible in their home and

be as independent possible”, “increase pts quality of life”, “to improve their functional abilities through the use of assistive devices,” and “to evaluate and assist patients with ADLs and increase safety in the home.”

Another question asked participants what could be done to improve a healthcare providers’ knowledge/ability to provide effective interventions for clients who have needs related to low vision and/or vision assistive technology. Responses included: “to increase my knowledge of resources and receive further training on devices that would help someone with low vision,” “resources and training on helping patient with low vision,” and “further training on low vision and the various equipment that is currently available.” One participant requested a brochure to go over with the patient giving ideas of different technologies and sources that are available.

A final question was posed in the survey, asking participants to describe one important thing learned from the presentation and how they planned to implement that into your practice. Responses were varied, but a few of the more salient responses included: “to be able to help patients improve quality of life”, “was able to learn resources and assistive devices to help patients with low vision”, “adaptive devices to assist low vision patients,” “some resources available to help patients at home with low vision,” and “educational tips for patients and caregivers.” One participant commented about increased awareness of the role of occupational therapy in low vision, stating: “I did not realize the number of items that are available for low vision patients to help with their day-to-day living, it is good to know that we can confer with OT for any questions/problems that may arise.”

Increasing home healthcare practitioners’ knowledge of LVAD, interventions and resources has the potential to improve the low vision client’s ability to maintain or improve

ADLs and IADLs and consequently, remain in the home. Research by Liu et al, (2013) indicated that multicomponent interventions were the most effective. These interventions included knowledge of low vision, use of low vision devices, problem-solving strategies, and community resources are the most effective approaches. Liu, et al (2013) also indicated that provision of multiple sessions of training allowing sufficient time for older adults to incorporate new knowledge and skills into daily activities were a key component of success. Occupational therapists' role would be to provide sufficient education to clinicians of the importance of the impact these interventions have a low vision client's ability to perform ADLs and IADLs for optimal level of independence with the home setting.

The effectiveness of this educational in-service was evident by the knowledge improvement indicated by the results of the participant survey. Data presented in tables 5,9, and 11 shows outcomes that improved for each question when comparing pre to post test results. Additionally, probability value for all Likert scale questions were $< .001$, supporting the likelihood that the difference between the pre and posttest occurred due to something other than chance. Finally, the participant responses to all questions indicated understanding and growth in realm of LVAD, interventions and resources.

Summary of Findings

This capstone project was conducted with healthcare practitioners to provide education on LVAD, interventions and resources to healthcare practitioners with focus on the home care setting. Quantitative analysis of the data revealed that the objectives of the study were met. Mean scores for each Likert scale questions improved from the pre to posttest, where pre-test questions ranged from 1.82 to 2.91 and the post-test questions ranged from 3.73 to 4.45, for an average of 2.14 or 42.8%. Based on these findings, the educational presentation provided to home

healthcare clinicians was found to increase home care clinicians' knowledge of LVAD, interventions and resources. Clinically, this is relevant to occupational therapy especially due to low vision services being identified as an emerging practice by the AOTA Centennial Vision (AOTA, 2007). However, additional research is needed as continued support of knowledge advancement and validation for occupational therapy practitioners in low vision (Liu et al., 2013).

Strengths and limitations

A strength of this educational in-service was the structure, content, and presentation of the low vision information. The presenter gathered and consolidated supported low vision information onto an educational in-service. Content was developed from a combination of presenter's knowledge learned while obtaining an assistive technology certificate from CSUN, literature review, clinical experience as an OT in low vision, and collaboration with experts in low vision and assistive technology. One study supporting LVAD education was located which occurred in 2005. The researcher identified current information supporting LVAD, interventions and resources and this information was successfully presented to home healthcare clinicians with supporting results.

Limitations were noted to be a small number of participants, presentation to only one home healthcare branch, two people completed only the pre or post survey and one did not complete either survey. The results of those who did not complete both pre and post surveys were not included in the data. The small sample size limits the ability of the results to be generalized outside of this study setting. Another limitation may be presentation mode. Due to COVID-19 restrictions, this presentation had to be completed virtually, limiting ability to incorporate interactive and multi-modal learning. The audience was made up of home health

providers who were probably more motivated to help people and therefore were perhaps more motivated to learn.

Implications for Practice

This capstone project demonstrated the benefit of healthcare practitioner education on LVAD, interventions, and resources. The Capstone aligned with AOTA's Centennial Vision where low vision services were identified as an emerging practice (AOTA, 2007). This program supports the goals of Healthy People 2020 and Vision 2025 because it helps promote improved quality of life for persons with low vision. This capstone project supported this goal and vision because it helped promote improved quality of life to home health clients and education of home health practitioners with current low vision knowledge. This project supports the concept that education is effective in teaching home healthcare professionals about topics that will benefit them in their practice and supports OT's and their ability to stand as leaders of change now and in the future. The educational presentation for this study was reinforced by the Adult Learning Theory in that presenting helpful information to home health practitioners could have an impact a client's functional abilities within the home setting.

Summary

This capstone project was directed at providing current educational information about LVAD, interventions and resources to home healthcare practitioners. Objectives of this capstone were to improve a home health care practitioner's knowledge about low vision, low vision assistive devices, interventions, and resources in order to maximize a client's safety and level of independence in the home environment. This researcher found evidence connecting the results of this study to the literature involving LVAD, interventions, and resources. This capstone helps to fill a gap in the literature involving the need for greater education on low vision and resources to

help those with low vision live more independently. The findings of this research were consistent with adult learning principles in that adult learning was self-motivated and was most relevant when the topic was applicable to some aspect of their life. Also, the project involved central thought analogous with the conceptual model of Occupational Therapy in Low Vision (Schoessow, 2010) which supported the need for physical ability along with the use of technology and compensations to enable the person with visual impairment to function as independently as possible within the home and community settings. This capstone met its objectives of improving knowledge and perceptions through education to practitioners about low vision.

Future projects/ research

Additional research is required to support outcomes of educational presentations for low vision and its related areas. The results of this study aligned with the hypothesis that health care practitioners can learn through an educational presentation. However, there is little additional research to support this theory. Therefore, more studies of education with health care professionals, specifically OTs, is necessary and as a vital area of future research to support OT. Results of this Capstone are significant and could be presented at local, state, or national levels. Capner (2005), has been noted to perform research involving LVAD and resource education, and Liu (2013) performed a study involving low vision interventions. The researchers combined to highlight the continued need for future research and support in the areas of low vision interventions, LVAD, and resources. Additionally, there are many opportunities for OT to promote their role and leadership in provision of services related to low vision.

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Appendices

Appendix A

The Effect of Education with Healthcare Providers on Low Vision Assistive Devices and Their Ability to Improve Self-Care Skills

Start of Block: Question Tour Block 3

Q1A When are you taking this survey?

- Pretest (before the in-service presentation) (1)
- Posttest (after the in-service presentation) (4)

Q1B To keep the responses anonymous, you will create your own alias (fake name) for the survey. Please remember your alias. You will use the same alias for the pre-survey and the post-survey so that we can compare each person's surveys before and after.

Type your alias (fake name) in the space below. **It should be a NAME followed by FOUR NUMBERS. (example: Felix the Cat 8547).**

Q2 Have you received formal training on low vision interventions or assistive technology as part of your healthcare professional education? (Do not include today's session).

- Yes, I received training on low vision interventions (1)
- Yes, I received training on assistive technology/devices (2)
- Yes, I received training for both (3)
- No, I did not receive training for either (4)

Q3 The following statements ask about your comfort level with different aspects of low vision and assistive technology. For each statement, click the rating that best reflects how comfortable you are with your knowledge/ability to work with or teach patients in the following areas.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
General knowledge of how low vision conditions impact daily living (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge of most current assistive devices and assistive technology (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge of assistive technology and assistive devices specifically for low vision (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge of resources for low vision (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge of resources for assistive technology (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge of how to teach/implement low vision assistive technology/devices within the home setting with patients (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge of role of occupational therapy with low vision interventions (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4 What is the role of occupational therapy in providing interventions for people who have low vision?

Q5 As a healthcare provider, what would improve your knowledge/ability to provide effective interventions for clients who have needs related to low vision and/or low vision assistive technology?

Q6 How many years' experience do you have working in your field/discipline?

- 0 to less than 3 (1)
- 3 to less than 5 (2)
- 5 to less than 10 (3)
- 10 to less than 15 (4)
- 15 to less than 20 (5)
- 20 or more (6)

Q7 What is one important thing you learned from the presentation today and how do you plan to implement that into your practice with patients?

End of Block: Question Tour Block 3

Appendix B



Indiana University Health

December 12, 2021

Dear Madam,

I would like to ask your permission to allow me to conduct a survey and educational presentation to the home health practitioners at ECR IU Home Health. My Capstone is entitled, "The Effects of Education with Healthcare Providers on Low Vision Assistive Devices and their ability to Improve Self-Care Skills". I plan to conduct an education on low vision assistive devices and administer a pre/post test to measure the effectiveness of the education.

The survey would be brief requiring less than 5 minutes to complete, prior to and immediately following the educational session. Participation in the survey is entirely voluntary and there are no known risks associated with the survey or education. All information gathered will be kept confidential and would be used only for academic purposes. The names of the participants and the name of the facility will not appear in the Capstone. After the data have been analyzed, I can provide a copy of the executive summary and/or a copy of the entire Capstone if requested.

If you agree, kindly sign below acknowledging your consent and permission for me to conduct the education/survey at the ECR Home Health facility.

Your approval to conduct this study will be greatly appreciated. Thank you in advance for your interest and assistance with this research.

Sincerely,

Lora L. Rains, M.S., OTR
Occupational Therapy Doctorate Student
Eastern Kentucky University

Approved by:

Jayne' Bell, RN
(printed name and title, date)

Jayne' Bell, RN
(Signature)

Appendix C

Hello Lora Rains,

Congratulations! Using a limited review process, the Institutional Review Board at Eastern Kentucky University (FWA00003332) has approved your request for an exemption determination for your study entitled, "The Effect of Low Vision Assistive Devices on a Client's Ability to Improve Self-Care Skills" This status is effective immediately and is valid for a period of three years as long as no changes are made to the study as outlined in your limited review application. If your study will continue beyond three years, you are required to reapply for exemption and receive approval from the IRB prior to continuing the study.

As the principal investigator for this study, it is your responsibility to ensure that all investigators and staff associated with this study meet the training requirements for conducting research involving human subjects and comply with applicable University policies and state and federal regulations. Please read through the remainder of this notification for specific details on these requirements.

Adverse Events: Any adverse or unexpected events that occur in conjunction with this study should be reported to the IRB immediately and must be reported within ten calendar days of the occurrence.

Changes to Approved Research Protocol: If changes to the approved research protocol become necessary, a Protocol Revision Request must be submitted for IRB review, and approval must be granted prior to the implementation of changes. If the proposed changes result in a change in your project's exempt status, you will be required to submit an application for expedited or full review and receive approval from the IRB prior to implementing changes to the study. Changes include, but are not limited to, those involving study personnel, subjects, recruitment materials and procedures, and data collection instruments and procedures.

Registration at ClinicalTrials.gov: If your study is classified as a clinical trial, you may be required by the terms of an externally-sponsored award to register it at ClinicalTrials.gov. In addition, some medical journals require registration as a condition for publication. In the case of journals with membership in the International Committee of Medical Journal Editors, clinical trials must be registered prior to enrolling subjects. It is important that investigators understand the requirements for specific journals in which they intend to publish. In the case of sponsored project awards, timeline requirements will vary for awards that require registration. Approved consent forms must be uploaded in the system for all Federally-funded clinical trials after subject enrollment has closed, but earlier registration is not required for all agencies. If you have questions about whether a sponsored project award requires registration and on what timeline, please send an email

to tiffany.hamblin@eku.edu before beginning recruitment so that the specific terms of the award can be reviewed. If you have a need to register your study and do not have an account in the system, please send an email to lisa.royalty@eku.edu and request to have a user account created.

If you have questions about this approval or reporting requirements, contact the IRB administrator at lisa.royalty@eku.edu or 859-622-3636.

For your reference, comments that were submitted during the review process are included below. Any comments that do not accompany an "I approve" response have been provided to you previously and were addressed prior to the review process being completed.

[View Application](#)

Faculty Advisor Approval

Reviewer 1

Comments	Response
Reviewer Input: : Approved.	I Approve

Reviewer 2

Comments	Response
Reviewer Input: : I can't wait to hear about the results of your study. This is very interesting and should be useful to low vision practitioners.	I Approve

Department Chair Approval

Reviewer 1

Comments	Response
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Reviewer Input: : best of luck on the study	I Approve
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IRB Review - Round 1

Reviewer 1

Comments	Response
Reviewer Input: : Approved!!	I Approve