

ACCESSIBLEHOMEPRO AS AN EDUCATIONAL INTERVENTION:
PREPARING OCCUPATIONAL THERAPY STUDENTS
TO PERFORM HOME SAFETY ASSESSMENTS

by

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ABSTRACT

ACCESSIBLEHOMEPRO AS AN EDUCATIONAL INTERVENTION: PREPARING OCCUPATIONAL THERAPY STUDENTS TO PERFORM HOME SAFETY ASSESSMENTS

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The growing aging population of the United States urges occupational therapy practitioners to address the population's home safety needs. However, current occupational therapists need more resources and education to conduct comprehensive home safety evaluations. This study employed a pretest-posttest mixed methods design using occupational therapy students (n=17) to investigate the potential of AccessibleHomePRO as an educational intervention to enhance OT student knowledge of home safety assessments, perceived knowledge, which is known as the belief in your level of knowledge, and self-efficacy, which refers to the confidence in completing a task. AccessibleHomePRO (AHP) is a novel multifaceted assessment that leverages artificial intelligence to guide practitioners through a comprehensive evaluation and provides evidence-based interventions and recommendations. This dissertation work incorporated the first-ever home safety course utilizing AHP as an initial step toward enhancing the home safety knowledge of OT students.

This study aimed to contribute to the scientific literature within occupational therapy education and practice. Implementing the AHP educational intervention showed potential for enhancing OT students' understanding of home safety assessment knowledge, perceived knowledge, and self-efficacy. Despite the absence of clinical significance, results also demonstrated improvements in test scores across both groups. Notably, fieldwork and home safety experience had some influence on results, albeit within the limitations of a small sample size. The intervention group's clinical and home safety terminology in their case study responses suggests promise. With revisions and a larger sample size, AHP holds the potential as an effective tool for enhancing OT home safety knowledge.

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To
my parents,
fiancé,
and family,

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LIST OF ABBREVIATIONS

AHP AccessibleHomePRO

ANCOVA Analysis of Covariance

ANOVA Analysis of Variance

CI Confidence Interval

MANOVA Multivariate analysis of covariance

NDA Non-disclosure Agreement

OT Occupational Therapy

PEO Person, Environment and Occupation Model

PEOP Person, Environment and Occupational Performance Model

U.S. United States

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Introduction:

AccessibleHomePRO as an Educational Intervention – Preparing Occupational Therapy Students to Perform Home Safety Assessments

Older adults increasingly desire to age in place and remain in their communities (New AARP Survey Reveals Older Adults Want to Age in Place, 2022).

However, failure to implement the meticulous steps involved in promoting home safety may result in a home accident that could result in injury or death (Home Safety, n.d.).

The United States (U.S.) Department of Housing and Urban Development reports, “Home accidents kill one person every 16 minutes and injure one person every four seconds” (Home Safety, n.d.). Home accidents can occur to individuals at any stage of life, and many of these are preventable, including poisoning, fires, and burns, choking, drowning, suffocation, strangulation, firearms, and falls. It is estimated that 20% of falling accidents occur in the home (Ratnayake et al., 2022), and with each fall, the risks of experiencing another fall and the chances of death rise exponentially (Keep on Your Feet—Preventing Older Adult Falls, n.d.; Older Adult Falls Data | Fall Prevention | Injury Center | CDC, 2023).

Home accidents are prevalent among all individuals; however, the older adult population has recently raised concerns within the United States healthcare system (Fulmer et al., 2021) due to a recent report that reveals 90% of older adults do not have aging-ready homes (Vespa et al., 2020). Aging-ready homes require extensive planning before a change in function that would require skilled care (National Institute on Aging, 2017; Vespa et al., 2020). A critical planning approach is to examine the home

environment for safety hazards. However, this may be impractical for older adults due to difficulty recognizing home safety issues and the absence of home safety knowledge. Therefore, it is imperative to seek a home safety professional to conduct a thorough home safety assessment.

Occupational therapists (OTs) are among the many healthcare professionals who can conduct home safety assessments. However, OTs are unique amongst other healthcare professionals due to their client-centered practice emphasizing the person, environment, and occupation (PEO). The OT profession leverages PEO to gather information regarding the client, essential activities or tasks necessary to the client, and the client's home environment (Law et al., 1996). Additionally, rather than focusing on a client's inability to complete or perform specific activities, the OT and client identify interventions to enable participation and improved independence.

Population of Concern

OT students are the population of concern. There are 607 OT programs in the United States, with an average of 23,436 students in the most recent AOTA Annual Report in 2018. According to the Bureau of Labor Statistics (2023), the OT profession outlook is 14% faster than the average, with 133,900 new jobs in the United States. The anticipated influx of OTs further supports the proposed AHP educational intervention as a steppingstone to meet the needs of the growing aging population. OTs are unprepared to address the home safety needs of the growing aging population due to insufficient home safety training that stems from the absence of a standardized curriculum at the program level.

Statement of the Problem

Occupational therapists are unprepared to address the home safety needs of the aging population due to insufficient home safety training that stems from the absence of a standardized curriculum at the program level.

Theoretical Framework

Three theoretical frameworks were used to guide the study: The Person Environment Occupation Performance model, self-efficacy theory, and self-determination theory as secondary frameworks. The PEOP model was chosen due to its alignment with the OT profession and its pertinent relevance when assessing clients' home environments. Utilization of the PEOP model assisted the investigator during the intervention development process and overall home safety course development. The self-efficacy theory was chosen to guide the researcher in understanding student motivation and autonomy, which directly relate to students' participation in the study and their time commitment. The investigator utilized this theory to improve understanding of student participation in the study. The self-determination theory was also used to guide the study specifically related to education and its impact on future behavior. Principles from this theory were employed particularly during the search and development of instrumentation, specifically how the educational intervention could impact future clinical behavior. In the context of this study, the PEOP model, self-efficacy theory, and self-determination theory collectively provide a multi-dimensional approach when considering the OT profession and its principles, OT interventions, education, and how education influences future practice.

Person-Environment Occupation-Performance Model

The OT profession utilizes the PEOP model to assess the interaction between the person or patient of interest (including physiological, psychological, motor, sensory/perceptual, cognitive, or spiritual characteristics), their physical environment, and factors (including cultural, social support, social determinants, and social capital, physical and natural environments, health education and public policy, assistive technology features), and their daily tasks (activities or roles) or occupations (Baum et al., 2015). Initially, the investigator chose the PEO model for the framework since it is a foundational component of the OT profession (Law et al., 1996). The interaction between the person, environment, and occupation can positively or negatively impact one's occupational performance or ability to carry out daily activities and roles (Ranka & Chapparo, 1997).

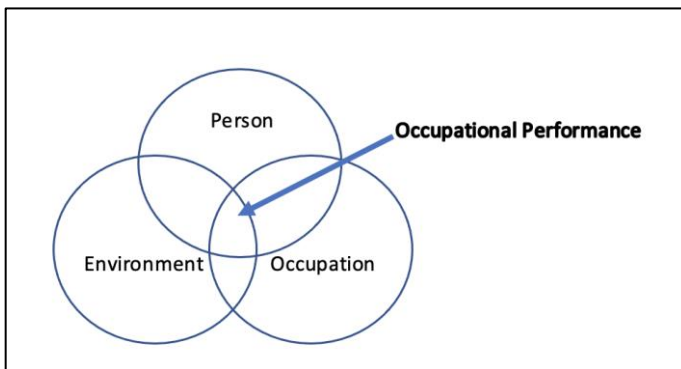
When conducting home safety evaluations with AHP, the sections of the assessment are separated into "P", "E", and "O". However, the PEOP model was selected since it incorporates occupational performance. Occupational performance is the ability to carry out daily activities and roles (Figure 1; Ranka & Chapparo, 1997). If we consider the person, their home environment, and the daily activities they complete or desire to complete, we must look at the interaction and how the person performs their daily roles and tasks. The AHP educational intervention leverages this model to provide a comprehensive assessment of all the essential components and factors that go into a comprehensive home safety assessment. For example, the case study and fictitious client painted a picture of the complex interaction between the patient, environment, occupations, and factors that inhibit or support their independence in the home. The

PEOP model analyzes this interaction and how it relates to clinical reasoning in home safety.

The PEOP model guided the researcher in selecting appropriate educational materials that simulate a typical home safety assessment. The PEOP framework directly aligns with the OT profession and is the foundation of AHP. The framework must be applied in order to obtain a thorough understanding of home safety content.

Figure 1.

PEOP Model



Self-Efficacy Theory

The self-efficacy theory (Bandura, 1986) was selected due to its consideration of behavior, motivation, well-being, and its effect on future behavior (Self-Efficacy, 2023; Sutton, 2001). Previous literature recognizes self-efficacy as one of the main factors that influence academic performance (Hayat et al., 2020; Meera & Jumana, 2015; Nash et al., 2022) regardless of age, gender, and discipline (Meera & Jumana, 2015; Nash et al., 2022). This theory directly relates to home safety due to its emphasis on skill mastery, an essential skill for practitioners due to the many challenges reported by practitioners who work in the home environment. The obstacles faced by practitioners working in the home environment and conducting home safety assessments influence the measurements used in the study to assess participant knowledge, motivation, and skill level. The upcoming literature review will discuss obstacles or complexities

experienced in the home environment. In general, when an individual has a high level of self-efficacy, they are more likely to be resilient and live a healthier lifestyle. When considering the stressors often experienced in the home environment, there is a critical need to train OTs how to adapt and be resilient to be prepared to conduct a home safety assessment in the home environment.

Self-Determination Theory

The self-determination theory (SDT) was employed as a theoretical framework to support the study. Since the educational course was voluntary and outside participants' class time, it was essential to use this lens to understand human motivation, autonomy, competence, and relatedness to promote autonomy (Koole et al., 2019). SDT took on a first-person perspective and delved into individuals' subjective experiences, which was valuable as a lens for the perceived knowledge component of the study. SDT had previously been used in OT literature with evidence that some elements of the theory could be applied to professional reasoning in OT students' (Bolton & Dean, 2018). SDT also guided the researcher in the development of the interactive case study within the educational course to facilitate student learning and reasoning (Bolton & Dean, 2018). Therefore, SDT was essential for the present study to measure participants' overall autonomy, competence, and motivation to understand the correlation with participant assessment performance.

LITERATURE REVIEW

The following literature review will explore the role of OT in conducting home safety assessments for the aging population, discuss current and future anticipated challenges, limitations of current practice and home safety assessments, the significance of home safety education for OTs, and the potential for AHP in OT education.

The aging population and their anticipated healthcare needs have received global attention (Ageing and Health, 2022). It is estimated that by 2050 there will be 83.9 million older adults in the United States aged 65 and older (Grundy, 2022). Advancements in modern medicine have increased the life expectancy of older adults, which has also led to living longer with chronic conditions, resulting in decreased participation in daily activities (Maresova et al., 2019). Chronic conditions such as heart disease, diabetes, and arthritis disproportionately affect older adults (National Council on Aging, 2023), requiring assistance with daily activities such as bathing, feeding, tidying the house, running errands, and other activities (Keefe & Fancey, 2000, as cited in Faronbi, Faronbi, Ayamolowo, & Olaogun, 2019). Despite these challenges, there is a growing desire from the older adult population to age in place, or to remain in their homes and communities safely, independently, and comfortably (Horowitz et al., 2013). This has altered the meaning of aging and its effect on the home, function, long-term care, and quality of life (Horowitz et al., 2013).

Current approaches for home safety are to have a health professional or home safety expert conduct home safety assessments. However, current home safety assessments are narrow in scope and the comprehensiveness of home safety

assessments is not discussed in OT curricula and there is no existing educational tool to prepare OT students on how to conduct a home safety assessment. It is important to note that even if a home safety assessment educational tool existed, the assessment would likely lack the comprehensiveness needed for a thorough assessment. The limitations of current home safety assessments stem from their narrow focus, likely leaving OTs unprepared to conduct thorough home safety assessments. Both entry-level and expert-level OTs need a comprehensive assessment tool to ensure best practice and comprehensiveness. However, the process of familiarizing oneself with best practices using a tool should be integrated into the occupational therapy curriculum, rather than waiting until they enter practice. At the OT educational level, home safety is not emphasized in the professional accreditation guidelines and there is no existing educational curriculum focused on home safety education. Therefore, a systematic educational curriculum leveraging the latest technology and best practices for home safety is imperative to address the needs of the escalating older adult population.

The following literature review will review the following topics: 1) The Importance of OT in the Practice of Home Assessment, 2) Challenges experienced by practitioners in the home, 3) Home safety assessments and OT, 4) OT and home safety education, and 5) AHP background and potential for OT education.

Overview of OT

The following section provides a brief overview of OT, their relation to working in the home safety and the home environment, and some challenges faced when working in the home setting.

OT is a skilled profession embedded in research and scientific evidence to facilitate interventions that enhance the health, well-being, and independence of clients (American Occupational Therapy Association, n.d.). OTs are unlike any other profession due to their holistic emphasis on developing, recovering, improving, and maintaining client skills needed for participation in daily activities environment (Occupational Therapy Practice Framework, 2020b). OTs can provide interventions, adaptations, or recommendations (Raymond et al., 2020) directly in the client's home environment, with evidence supporting their effectiveness (O'Hagan et al., 2023)

In other practice settings, OTs are not in the client's natural home environment and must additionally provide education on how to transfer skills from the current setting to the home environment (Babulal et al., 2016). For example, if a client is at an inpatient rehabilitation facility working on a modified meal preparation task, the OT must provide the similarities and differences between the two environments (Babulal et al., 2016), which may require a home visit, photos, or a video (BREEDEN, 2016; Exploring Older Adult Home Safety Education with Photo Elicitation via Telehealth, n.d.)

OTs work with clients, (preferred over "patient) (Mroz et al., 2015), to occupations they want and need to do (American Occupational Therapy Association, n.d.). Occupations encompass everyday activities that are fundamental to a client's health and identity, providing purpose and meaning in their lives (Occupational Therapy Practice Framework, 2020b). Activities of daily living (ADLs) and instrumental activities of daily living (IADLs) are two prominent occupations completed in the home environment. ADLs include bathing and showering, toileting and toilet hygiene, dressing, eating, swallowing, feeding, functional mobility, personal hygiene and

grooming, and sexual activity. IADLs include care of others, care of pets and animals, child rearing, communication management, driving and community mobility, financial management, home establishment and management, meal preparation and cleanup, religious and spiritual expression, safety and emergency maintenance, and shopping (Occupational Therapy Practice Framework, 2020b; Pendelton & Schultz-Krohn, 2018)

OTs provide skilled interventions and recommendations within the client's social, physical, and cultural environments to improve independence with ADLs and IADLs (Pendelton & Schultz-Krohn, 2018). To guide their interventions, OTs utilize a holistic client-centered approach, leveraging the person-environment-occupation (PEO) model (Law et al., 1996) to understand the complex interaction between the person (including physiological, psychological, motor, sensory/perceptual, cognitive, or spiritual characteristics), physical environment, and daily tasks or occupations (Baum et al., 2015). This dynamic interplay can positively or negatively influence occupational performance or the client's ability to engage in daily activities and roles (Ranka & Chapparo, 1997) and prevent future loss of function (American Occupational Therapy Association, n.d.). Furthermore, integrating the PEO model into all facets of the provisioning process ensures that the person (client), environment, and occupations are considered (Occupational Therapy Practice Framework, 2020b; Ostrowska et al., 2023).

OTs can provide care in a multitude of settings including, “ in a client's home environment, community settings (e.g., community centers, shelters, free clinics), hospitals, nursing homes, outpatient clinics, primary care offices, schools, and many other locations” (American Occupational Therapy Association, n.d.). Older adults with acute or chronic conditions typically receive initial care in a hospital setting (e.g., acute

care, long-term acute care, inpatient rehabilitation). When a client's condition is medically stable or improves, they are typically discharged from inpatient medical services to their home to receive community-based care or remain independent. Community-based care involves treating and observing clients in their natural environment, such as their homes. OTs play a unique and vital role in improving client independence and recovery in the home (Boutin-Lester & Gibson, 2002; Morgan & DiZazzo-Miller, 2018). When OTs conduct evaluation and assessments, and prescription of intervention in the client's home environment, OTs gain invaluable insights into the patient's everyday habits and spontaneous behaviors that they would not receive in a skilled setting, such as a hospital (Law et al., 1996).

In the home environment, OTs observe and assess a client's function and perform skilled interventions tailored to their specific healthcare needs (Boutin-Lester & Gibson, 2002). Provision of care in the familiarity of the client's home environment increases the carryover of interventions following discharge and minimizes the complexity of transferring skills without professional guidance (Babulal et al., 2016). Ostrowska and colleagues (2023) reported, "OTs play a key role in helping patients and their families plan a safe, functional, and comfortable home environment, supporting home healthcare services". OTs focus on a client's multifaceted contexts and dimensions, such as their physical, cognitive, emotional, and sensory aspects of the environment. When OT services are delivered in person in the client's home environment, evaluations and interventions have the most successful outcomes in comparison to other settings ("OT Practice Framework," 2020).

Delivering OT within the home allows practitioners to observe clients in their natural environment to identify factors that facilitate or impede participation in daily activities. Daily activities commonly observed include dressing, feeding, bathing, showering, toileting and toilet hygiene, and functional mobility (“OT Practice Framework,” 2020). Common OT interventions revolve around the training of assistive technology, activities of daily living, instrumental activities of daily living, functional mobility, energy conservation, medication management, fall prevention, safety adherence, home modifications, and caregiver training, among others (American Occupational Therapy Association, 2004; Cook & Polgar, 2015; Doyle, n.d.). OTs can provide education and support to caregivers or other individuals living in the home who may have questions or experiencing caregiver burnout (vnadmin, 2022).

Specific to the home environment, OTs use home safety assessment tools to identify recommendations and strategies needed to promote home safety and independence (Harper et al., 2022; Peterson & Clemson, 2008), with evidence revealing improved patient outcomes were associated with the utilization of home safety evaluations. Additionally, the lack of implementation of home safety assessment recommendations was linked to increased falls and functional decline (Clemson et al., 2004; Cumming et al., 1999; Harper et al., 2022; Leland et al., 2015). Decreased implementation of home safety recommendations due to their complexities are one of many challenges faced when working in the home environment and practitioners and OT students must be informed.

The literature review thus far has highlighted the significant contribution OTs can make to improve older adult home safety in the home environment. However, it is

critical to recognize that in addition to inadequate training, additional barriers may deter OTs from learning about home safety and the home setting in general.

Challenges Faced by Practitioners in the Home Setting

Home health care offers numerous advantages to patients receiving care in the comfort of their own homes. However, from the practitioner's standpoint, it comes with many challenges. It is essential to discuss the challenges associated with working in the home environment to provide some reasoning as to why OTs and other practitioners may be hesitant to work in this setting. Healthcare practitioners or professionals, such as OTs, working in home health encounter challenges and obstacles, including a lack of support or camaraderie from their peers in the healthcare industry and the unique nature of the home healthcare environment (Occupational Therapy Practice Framework, 2020b; Pendelton & Schultz-Krohn, 2018). Existing literature highlights the difficulties faced by healthcare workers, with a particular focus on the nursing profession (Fatemi, N.L. et al., 2019; Ghezeljeh et al., 2022; Hatcher, 2020; Sabetsarvestani et al., 2022). Time constraints emerge as a common challenge faced by healthcare workers, including home health practitioners. Although the literature lacks a discussion on time constraints and OT practitioners' productivity requirements and time constraints, which have been shown to increase stress (Alquezar-Yus, 2021; Chandrashekar et al., 2019; Cote et al., 2022).

Home health practitioners face a significant challenge due to limited resources available in a patient's home environment. Unlike in hospitals, they cannot easily consult colleagues in a hallway or engage in interdisciplinary collaboration. Instead, they must seek guidance through phone communication or after the session from mentors or

colleagues. This reliance on remote interaction can be time-sensitive and may decrease patient confidence in the practitioner. Furthermore, when a patient's vital signs deviate from normal parameters, practitioners must promptly contact the physician's office and registered nurse for immediate reporting. However, this often involves contacting multiple individuals and enduring hold times before reaching the appropriate person to report.

Safety is another concern with home healthcare workers reported to have twice the risk of injury compared to non-home health workers (Marrelli & Rennell, 2020). The National Institute on Occupational Safety and Health (NIOSH) reports physical safety concerns related to musculoskeletal injuries and violence (Department of Health and Human Services, 2010).

Licensed healthcare professionals, including OTs, have primary responsibility for lifting and moving patients during functional transfers and activities related to ADLs and IADLs interventions, which puts them at risk of injury. While such incidents occur in other healthcare settings, practitioners in home health lack the support of additional staff and healthcare workers to assist with patient movement, and transfer equipment is typically unavailable. In most cases, such transfers still require two individuals for safety and legal reasons.

Furthermore, home health practitioners often experience stressors related to patient death, work and time pressures, healthcare cost and savings pressures, patient aggression, and uncooperative patients (Davidhizar, 1999; Jarrell, 1997; Davidhizar, 1997; El-Askari & Debaun, 1999; BLS, 2008; Department of Health and Human Services, 2010). Occupational stress is defined as the harmful physical and emotional

responses that arise when job requirements do not align with the capabilities, resources, or needs of the worker (Department of Health and Human Services, 2010). Factors contributing to occupational stress in the home environment include work overload, time constraints and pressure, and role ambiguity (Department of Health and Human Services, 2010). Additionally, the lack of camaraderie and face-to-face support from supervisors can lead to poor interpersonal relationships and decreased support for healthcare practitioners. Moreover, home healthcare practitioners encounter unique stressors that are not experienced by healthcare providers in other settings, such as unsupervised sessions, working alone, traveling to unsafe locations, encountering patient abusers, engaging in family arguments, dealing with dangerous animals, and facing traffic hazards (Department of Health and Human Services, 2010).

One of the largest challenges to OT practitioners is to incorporate evidence-based practice into their work. OTs currently incorporate evidence-based practice by applying evidence from one's practice experience and continuing education (Bennett & Townsend, 2006). Bennett and Townsend (2006) also report OTs use evidence-based practice by reviewing the latest research, but they do not describe the challenges of this. Incorporating the latest evidence can be difficult even for the best of practitioners due to the timeliness of the job and additional time required outside of work to take time to review. Additionally, the challenges involved in selecting appropriate assessments and tools for home safety raise an important question about the adequacy of education programs and tools provided in the field.

Home Safety Assessments and OT

Home safety assessments are a vital tool for OTs to effectively evaluate a client's home environment to identify hazards that may harm or impede daily function. There are a variety of home assessment tools that differ in tool user, population focus, timing in care plan, and the types of features assessed in both built and non-built environments (Mihandoust et al., 2021). Assessment tools can be in paper format, technology-based, or a combination of the two (Mihandoust et al., 2020).

Despite the abundance of available home safety assessments, they remain complex and narrow in scope due to focusing on only a piece of the comprehensive and complex home safety process. For example, some assessments solely focus on fall assessment, discharge planning, or for clients with specific diagnoses (e.g., dementia). Without proper training or confidence in which assessment or assessments to use, the prescription of interventions and recommendations will not meet the client's unique and specific needs. Due to the wide array of assessments, it is not known how OTs select appropriate assessments and interventions for the home safety assessment process which presents a conundrum as to how they provide best practices and care to clients. According to Weeks and colleagues, OT assessments must include the following: "client-centered focus, emphasis on occupation and occupational performance, and comprehensive assessment of the environment, in addition to strong psychometric properties" (Weeks et al., 2010).

A client-centered focus is one of the main philosophies of the OT profession. The client-centered philosophy must be implemented to ensure services are specific to clients' lives, values, and priorities ("Canadian Association of Occupational Therapists Position Statement: Assistive Technology and Occupational Therapy," 2003; Law et al.,

1996, p. 199). Therefore, home safety assessments used in practice must incorporate a client-centered approach to ensure the intervention and treatment is tailored to the specific client's goals. Home safety assessments are a vital tool for OTs to evaluate the home environment accurately and effectively. However, creating safe and inclusive environments is a complicated process ("Inclusive Environments," 2023). Therefore, specific home safety assessments were explored in the literature to identify current practices and potential limitations of available home safety assessments.

Search Strategy for Home Safety Assessment Literature Review

The investigator convened with a health sciences research librarian on two occasions to obtain expert counsel pertaining to database selection and medical subject headings (MeSH) for optimal search strategy. The following databases were explored for relevant articles: PubMed, CINAHL, OT Seeker, REHABDATA, APA PsychInfo, Cochrane, Open Science Foundation, Med Archive. The following search terms were used: home health, OT, in home assessments, evaluation, home modification, fall prevention, at home rehabilitation, home-based OT, and aging in place.

Selection Criteria

Several home health assessments were identified, such as discharge planning and screening tools, in-home assessments, telehealth assessments, and clinical reasoning. For the purposes of the review, discharge planning, diagnostic specific (e.g., dementia only), telehealth, and consumer or client-initiated assessments were excluded from the review.

Home Safety Assessment Literature Review Results

The following home safety assessments were identified: Health Outcome Measurement and Evaluation (SAFER-HOME), Safe At Home Checklist, OT Home Health Evaluation Checklist & Quality Measures, The Comprehensive Assessment and Solution Process for Aging Residents (CASPAR), Home for Life Design, Cougar Home Safety Assessment, HomeFast, Housing Enabler, Westmead Home Safety Assessment (WeHSA), In-Home Occupational Performance Evaluation (I-HOPE).

SAFER-HOME. The SAFER-HOME assessment evaluates the usefulness of OT evaluations to facilitate aging in place, identify barriers, and evaluate changes to the home environment. SAFER-HOME is a lengthy (119 questions) and includes a one-hundred-page manual. Furthermore, SAFER-HOME does not incorporate intelligent branching for efficient completion of the assessment (Chiu & Oliver, 2006). The literature revealed some psychometrics of the assessment including that it has demonstrated good reliability, validity, and internal consistency (Department of Health and Human Services, 2010).

Safe at Home Checklist. The Rebuilding Together Safe at Home Checklist identifies home safety, fall hazards for a client, homeowner, or family member (Monbo, n.d.). Rebuilding Together is a non-profit organization that provides services to make essential repairs in individuals homes (Rebuilding Together: About Us, 2015). The purpose of the Safe At Home Checklist is to identify home safety, fall hazard and accessibility issues in the home (Rebuilding Together, n.d.). For the purposes of the study below, this assessment will be used for the control group due to its readily accessible online presence.

The Safe At Home Checklist is divided into twelve categories: exterior entrances and exits; interior doors, stairs, and halls; bathroom; kitchen; living, dining, bedroom; laundry; basement; telephone and door; storage space; windows; electric outlets and controls; heat, light, ventilation, smoke, carbon monoxide, and water temperature control (Grasso et al., 2023; Monbo, n.d.). Within each category, there are a variety of recommendations, ranging from four to fourteen, aimed at improving safety, fall prevention, and implementing accessibility modifications. The checklist's available only in paper format and the absence of technology integration may result in outdated and insufficient recommendations.

OT Home Health Evaluation Checklist & Quality Measures. AOTA developed a checklist for OT home health practitioners. For this review, the quality measures will not be discussed due to the complexity involved, since there is no billing involved in the study, and participants have not received education on the quality measures at the time of the study. AOTA describes the checklist as a reminder of areas to address during an evaluation to ensure occupation-based, client-centered interventions. The checklist is also readily available online for free and therefore will be used in conjunction with the Safe at Home checklist for the control group in the following study.

CASPAR. The Comprehensive Assessment and Solution Process for Aging Residents (CASPAR) is a tool that enables practitioners and professionals (e.g., building professionals and healthcare professionals, such as OTs) to identify appropriate home modifications for aging in place older adults. CASPAR considers the interplay between the home environment and the clients abilities and preferences (“Comprehensive Assessment and Solution Process for Aging Residents (CASPAR),”

n.d.). The assessment can provide individualized recommendations without necessitating an in person visit from the home modification specialists (Pynoos et al., 2012; Weeks et al., 2010). The OT or case manager completes the CASPAR assessment measurements and takes photos of the home environment, and the client completes the self-reported questions on capabilities in the home. Due to the extensiveness of the required measurements for the CASPAR assessment, the process may become time consuming for the OT, particularly when major home modifications are not needed.

Home for Life Design. Home for Life Design (HFLD) is an app that aims to identify and eliminate barriers in the home to increase independent living (Get Peace of Mind with Home for Life Design®, n.d.). HFLD measures the home environment and assists people with disabilities and their caregivers with assessing aspects of the home. Evidence reveals the HFLD demonstrates reliability and validity (Get Peace of Mind with Home for Life Design®, n.d.). While HFLD offers beneficial features, it does not reach comprehensiveness due to its failure to measure the person and occupations they complete in their home and does not incorporate the full PEO model. Psychometrics reported include moderate construct validity and acceptable internal consistency (Lindstrom & Sithong, 2017).

Cougar Home Safety Assessment. Cougar Home Assessment focuses solely on evaluating the home environment and does not account for client-centered needs (Fisher et al., 2006). The assessment includes 78 criteria that must be answered via observation, interview with the client, and testing of home items (Cougar Home Safety Assessment 4.0 - Initial Visit, n.d.)

Home FAST. Home Fast is an assessment tool that assesses 25 environmental hazards in the home environment identify fall risk (National Council on Aging & USC Leonard Davis School of Gerontology, 2017). The assessment only considers the environment and does not consider the client or the occupations they desire to complete.

Housing Enabler. Housing enabler is an instrument that measures the accessibility of a home leveraging a person-environment fit quantitative measure. The instrument is aimed at the improving the accessibility of older adults; however, it does not apply to individuals with severe disabilities (Norin et al., 2019) and fails to leverage the latest technology (e.g., paper format only). No psychometric properties were reported for this instrument in the literature.

WeHSA. The WeHSA aims to identify environmental hazards that could increase the risk of falls for the elderly population (Chu et al., 2016; Romero et al., 2018). WeHSA addresses the following categories: internal/ external traffic ways, general/ indoors, living area, seating, bedroom, bathroom, kitchen, laundry, footwear, and medication management. WeHSA only considers the home environment and does not consider the patient's specific desired tasks or occupational needs.

I-HOPE. I-HOPE is a performance-based assessment used to evaluate the functional performance of essential activities in the home in relation to the environment for older adults (Flynn & Hildebrand, 2021; Somerville et al., 2016). I-HOPE evaluates the person and occupations in the context of the environment, but the assessment is outdated and not easily transferrable for practitioners due to its hard copy manual consisting of assessment, forms, lists, activity cards, response cards, and score sheets

(Stark et al., 2010). This limits the practitioner's ability to efficiently perform documentation tasks in a timely manner (Forum on Aging et al., 2015), which could be costly to home healthcare agencies (Doak, 2022). In a study assessing informal caregivers, subscales including activity participation, performance, satisfaction, self-efficacy, and severity of environmental barriers demonstrated reliable internal consistency (Stark et al., 2010).

Although these assessments serve specific purposes, they are limited in scope, addressing only certain aspects of the home environment, person, or occupation, and lacking comprehensive coverage. For example, the SAFER tool has limitations in terms of where the assessment can be conducted. Similarly, the Cougar Home Assessment focuses solely on evaluating the home environment and does not account for client-centered needs. The existing literature suggests that home modifications alone may not effectively minimize falls, highlighting the importance of OT interaction and education in addition to modifications (Fisher et al., 2006).

Finally, the grey literature noted that some practitioners rely on clinical reasoning and judgment to evaluate the home and make recommendations for safety modifications, which directly impacts the quality of the home assessment (Struckmeyer & Pickens, 2016); Ahmad et al., 2022; Iwarsson et al., 2012; MacLeod & Stadnyk, 2015). It is not known how these OT practitioners acquire such clinical reasoning and if they sought out external training after completion of an OT program.

The aforementioned assessments, without clear guidance and comprehensive options, bring about significant uncertainties regarding the best practices in home safety. Overall, the literature was moderate, but raises questions on how OTs select the

most appropriate assessment and if they use multiple home safety assessments at a time.

OT Home Safety Education

According to the literature, it is not known how educational programs prepare OT students for home safety or home health practice. The scientific literature highlights preparation for acute care practice (Inpatient Acute Care OT, 2020), cultural humility (Agner, 2020), and mental health (Scanlan et al., 2015; Scanlan et al., 2017), but fails to specify preparation for home health practice. However, the nursing literature extensively addresses the preparation of nursing students for home health practice (Distelhorst & Wyss, 2013; Mager & Grossman, 2013; Meyer, 2021; Smith & Barry, 2013). Research articles published in the late 1990s explored strategies and approaches aimed at fulfilling the requirements of older adults by offering relevant education and Level II fieldwork experiences (Lindstrom-Hazel & Bush, 1997; Siebert, 1997).

The grey literature highlighted insights in the form of blog posts, which offered a broad exploration of home health practice-related topics. An article by OT Miri provided an in-depth analysis of the role of OT within home health, examining the evaluation, intervention, and discharge processes. Additionally, the article discussed the advantages and disadvantages of working in a home health setting, along with must-have equipment for practitioners (Lee, 2019). Another notable blog post, "My OT Spot," provided information on OT in the home health context, including insights on the home environment, treatment approaches, and guidance on locating mentorship opportunities (COTA/L, 2023). The grey literature also expresses caution towards entry-level OTs pursuing home health as an initial setting. Further investigation is needed to determine

the underlying reasons. The investigator postulated whether this may be due to the inadequacy of OT programs in effectively preparing OT students for home health practice. In general, when preparing OT students for practice in the academic setting, students must have adequate self-efficacy and confidence to ensure academic achievement and understanding of course material (Hayat et al., 2020; Honicke & Broadbent, 2016).

OT Education Linkage to Self-Efficacy

The OT education literature discusses the linkage of self-efficacy and academic performance in OT education. Self-efficacy is a construct often measured in education due to its link with motivation and achievement in academic settings (Nash et al., 2022). The literature highlights the measurement of self-efficacy in OT education exploring its role in improving practicum and simulated clinical experiences (Nash et al., 2022). Self-efficacy has been studied in a variety of medical and allied health professions (Doneski, 2017; Wilkinson et al., 2016) and specifically in the OT profession for case simulations, clinical practicums, and online learning during the COVID-19 pandemic (Andonian, 2013; DaLomba et al., 2022; Nash et al., 2022). With the countless literature surrounding self-efficacy assessments, researchers may find it difficult to select the most appropriate measure to assess self-efficacy. However, Bandura (1977) shares that there is no one correct assessment to measure self-efficacy, and that the assessment type should depend on the study context (Frontiers | Which Task Characteristics Do Students Rely on When They Evaluate Their Abilities to Solve Linear Function Tasks? – A Task-Specific Assessment of Self-Efficacy, n.d.).

AHP: Background and potential for OT education

AHP was designed by a group of researchers to enhance independent living for people with disabilities and older adults who wish to age in place (Mendonca et al., 2018; R2D2 Center, 2004a). The assessment explicitly utilizes the person-environment-occupation model to identify specific hazards within the home environment for each unique client. Its primary objective is to gather comprehensive data on the person, environment, and occupations, enabling the development of evidence-based interventions tailored to meet the unique needs of each patient. With over 2000 questions, AHP incorporates expert-level artificial intelligence branching, which filters out unnecessary or irrelevant questions. Therefore, the number of questions answered by an individual may be considerably fewer than the total number available.

AHP efficiently tailors and optimizes questions based on the input data, presenting them in a logically sequenced and relevant manner, thereby ensuring efficiency in the assessment process. Although AHP is not yet publicly available, it has undergone extensive participatory action research, involving expert clinicians and people with disabilities who provided invaluable expertise, suggestions, and recommendations regarding the assessment's content, presentation, sequencing, and information requirements (Mitchell-Gillespie et al., 2023). This collaborative approach ensures that the assessment aligns with best practices and addresses the specific needs of people with disabilities in their home environments. Another noteworthy feature of AHP is its cloud-based data storage, which facilitates easier follow-up and updating of patient information following appointments and sessions. This capability enhances the continuity of care and supports ongoing monitoring and adjustment of interventions based on changing patient needs.

The investigator postulates the potential of AHP as an educational tool to enhance OT student home safety knowledge and self-efficacy. Due to its extensive 2000 questions, integration of the person, environment, and occupation, and generation of intervention protocols, it could provide OT students with a step-by-step understanding of the intricate process involved in conducting a comprehensive and effective home evaluation. The investigator anticipates that students will gain invaluable insights into the multitude of components that need to be addressed to complete a thorough assessment and that AHP will be the solution to bridge the existing gap in OT education literature. The information provided above was described to set the stage of why there is a need to conduct research related to this topic the need for the OT educational intervention and specifically why the AHP assessment was leveraged for this study. Given the comprehensiveness of AHP, it could serve as an asset to promote student knowledge in home safety. However, evidence is needed to demonstrate its potential contribution to OT education. Therefore, the following study was conducted to investigate the impact of an AHP educational intervention on OT student homes safety knowledge.

METHODS

The methods section provides comprehensive details on research questions, conceptual framework, design, variables, pilot work insights, instrumentation, course content, procedures, and data analysis approaches for both quantitative and qualitative data. Initially, this study focused on quantitative data only. However, the richness of the open-ended responses to case study questions suggested the need to integrate qualitative methods into the study to substantiate the quantitative data and enhance the interpretation of the subjective study measures. The following study included two randomly assigned groups: 1) the intervention group which received the AHP intervention or 2) the control group which received a placebo consisting of a Ted Talk video. Several research questions and hypotheses were formed to evaluate the effectiveness of the AHP intervention on OT students' home safety knowledge.

Research Questions and Hypotheses

The study probed several research questions and hypotheses to investigate the impact of the AHP Educational Intervention on OT students. The first question inquired whether there was a statistically significant increase in overall scores from the pre-posttest across the knowledge of home safety assessments, self-efficacy assessment, and perceived knowledge assessment for both groups. The corresponding hypothesis predicted that participation in the study, regardless of group assignment, would yield elevated post-test scores. The second research question assessed whether the AHP intervention resulted in a statistically significant increase of scores on all three assessments in comparison to the control group. The investigator hypothesized that participants in the intervention group would have higher post-test scores across all three

assessments. The third research question investigated the potential influence of covariates such as home safety experience, fieldwork experience, or OT program year on post-test scores. The investigator posited that all three covariates will influence post-test scores. The fourth research question explored whether themes emerged from the case study responses in the canvas courses and did not have a hypothesis due to the exploratory nature of the research question.

Conceptual Framework of the Variables

A conceptual framework was developed by the investigator to better understand the relationship between variables and to account for moderating variables, or factors, that may impact results. Figure 2 depicts a conceptual framework describing the expected relationship between the study variables. The investigator expects several confounding and moderating factors that may impact the outcomes of the AHP model.

Independent and Dependent Variables. The dependent variables of the study include home safety assessment knowledge, self-efficacy, and perceived knowledge. The independent variable being assessed in the study is the AHP educational intervention, which will be described further including how it was developed and the dozens of considerations that were implemented to optimize robustness will be discussed.

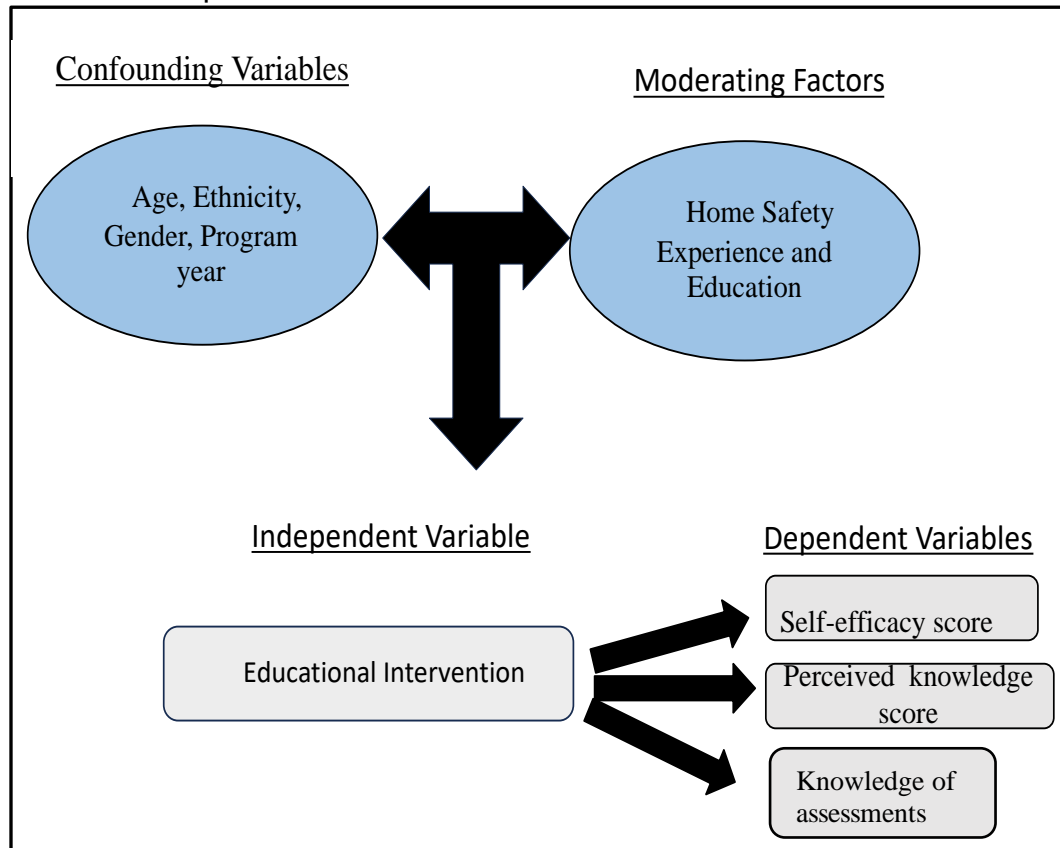
Confounding Variables. Potential confounding variables will be considered and statistically controlled by year in the program, fieldwork experience, gender, and ethnicity. However, due to the sample, gender, program University, and geographical location were excluded due to the homogeneity of the population, which will be elaborated upon in the results section.

Moderating Variables. Moderating variables of the study include home safety experience and previous education on home safety in their OT program. The investigator expects that previous exposure to home safety experience or education will yield higher self-efficacy and perceived knowledge scores.

Several research questions and hypotheses were formed to evaluate the effectiveness of AHP on OT student home safety knowledge.

Figure. 2

Conceptual Framework



Research Design

The study employed a pretest-posttest mixed method research design (See Figure 3;Portney, 2020) to investigate the AHP intervention and its potential for further testing. Due to limited data and few published studies on the topic, this study is

characterized as a feasibility study (Orsmond & Cohn, 2015a; Tickle-Degnen, 2013). Only participants in the intervention group received access to the AHP intervention, while the control group received a TedTalk video and question response as a placebo.

For quantitative data, three pre-posttest assessments were completed by OT students, and a demographic assessment to collect information about the sample and home safety experience. Qualitative data included text responses from 18 open-ended questions with all 17 participants. The open-ended questions were part of an interactive fictitious patient case study, which inquired about the patient's primary entrance, kitchen, bedroom, and bathroom. The study was granted exempt status by the University of Wisconsin-Milwaukee University's Institutional Review Board (#24.062).

Pilot Work

To prepare for the main study, preliminary work, termed "pilot work", was conducted to assess the functionality of the intervention, courses, and instruments. The pilot work involved four Masters of OT students, three adults with experience caring for older adults, and an OT researcher. The pilot work followed a three-step approach: 1) participant recruitment, 2) weekly meetings with OT research assistants and one-on-one meetings with the adults and occupational therapist, and 3) implementation of feedback into the course and instruments. The pilot work was deemed successful due to the insights gained regarding usability and clarity of the intervention and course. Outcomes of the pilot work yielded strategies to improve user-friendliness and course navigation. The pilot work was instrumental in establishing a foundation for a successful main study.

Recruitment for pilot work used convenient sampling, leveraging the university's connections to masters of OT students to review the canvas course content flow since they have been using the learning management system in their current program. Four OT students voluntarily participated. Additionally, three adults between the ages of 60 and 65 were recruited to provide their perspective on home safety as it relates to caring for their elderly parent. These participants reviewed home safety content and provided feedback related to overall flow of the course. Lastly, to enhance the clinical credibility of the interactive case study, an occupational therapist with five years of practice experience was recruited to review and validate the case study and to ensure the case was closely related to a real-life scenario.

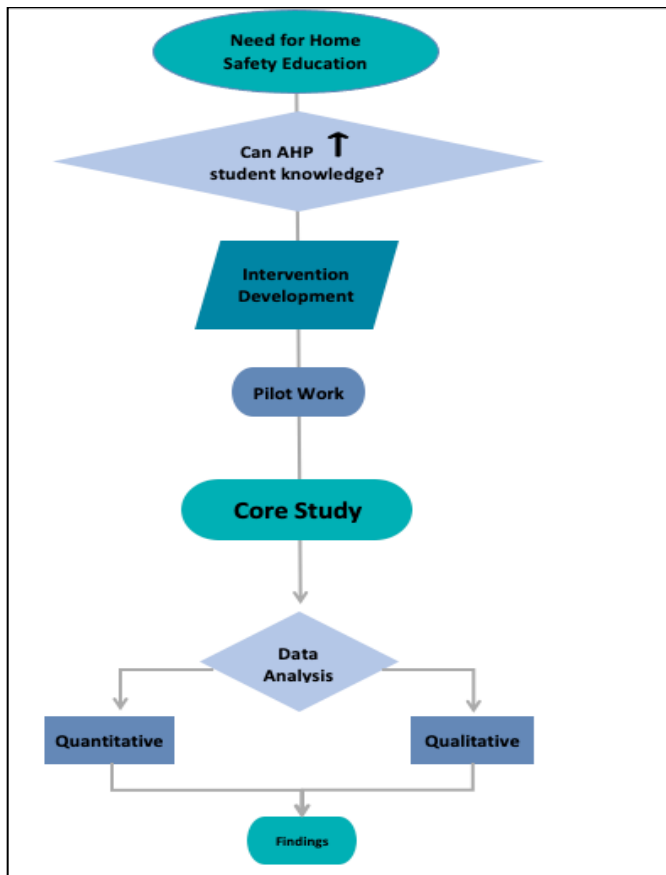
The investigator met weekly with four master OT students. Meetings included discussions on the intervention instruments, course content, and instrument testing. For example, on one occasion, the students were randomly assigned to a persona reflecting different knowledge levels of home safety to consider when filling out the instruments (e.g., very knowledgeable to not knowledgeable). This aimed to fill out the assessment assuming the assigned knowledge level and review the results afterward. For example, a person who answered "not knowledgeable" should theoretically score extremely low on the assessment, and someone who answered "very knowledgeable" should score high.

The investigator also met with adult caregivers separately to gain their home safety perspectives. However, meetings assisted with navigation in the Canvas learning management system. However, the three adults reviewed the entire course once they were acclimated. Follow-up virtual one-on-one meetings occurred for the investigator to

collect their feedback. Feedback consisted of the clarity of questions, instructions, flow of the course, and overall user experience. Finally, an OT reviewed the clinical component of the case study. Feedback from the OT provided invaluable recommendations related to OT-specific content. One notable comment suggested changing verbiage to emulate the client-centered nature of OT and how to integrate it within the case study, for example, “Consider client-collaborative phrasing like, ‘You and Sheila identify that she has difficulty...’”. The feedback incorporated aimed to promote a client-centered approach and emphasize the importance of collaborative engagement with the client.

Figure 3

Research Design



All participants actively contributed to refining the course and instrument content. Feedback from the pilot work provided invaluable insights on refining the course, instruments, and the clarity of instructions for the canvas course. After implementing revisions, the investigator proceeded with the main study.

Instrumentation

As discussed in the introduction chapter, no known instruments exist to address these concepts at home. Therefore, the investigator adapted two existing instruments, including the perceived knowledge assessment and self-efficacy assessment, and developed the knowledge of home safety assessments. All assessments will be described in more detail below. The perceived knowledge assessment measures a student's ability to assist with or conduct a home safety assessment hypothetically. The self-efficacy assessment asked students questions about their confidence related to the course, for example, questions about confidence associated with completing the course, problem-solving if complex ideas or topics arise, and their confidence in learning the overall material. The knowledge of home safety assessments specifically asked students to rate their knowledge on 17 specific assessments discussed in the literature review.

Perceived Knowledge Assessment

The perceived knowledge assessment was adapted from Baker and Gin (2023) to assess students' abilities before and after the course. The adapted assessment (Appendix A and B) included ten questions where participants were asked, "How would you rate your ability to..." with one column for "before class" and the other column for "after class." The questions were scored and weighted equally based on a 1-5 scale,

with 1 = none; have no ability 2 = low; have little ability 3 = average; have basic ability (but there is more to learn) 4 = high; have good ability 5 = superior; have excellent ability. The perceived knowledge test was scored out of 35 points. Evidence suggests the accuracy of student responses is increased when assessments are retrospective to minimize the risk of students over or underestimating their ability, and therefore, both assessments were administered at the end of the study (Geldhof et al., 2018; Lang & Savageau, 2017, as cited in Baker and Ginn, 2023). The assessment was piloted with OT students before administration.

Self-Efficacy Assessment

The self-efficacy assessment was adapted from the Confidence Self-Assessment Assessment to measure participant self-efficacy. The assessment was called the "self-efficacy assessment" for the present research study (see Appendix C and D). Albert Bandura coined self-efficacy to describe an individual's belief in how they will succeed in a particular task or situation (Lopez-Garrido, 2022). There are many forms and versions of self-efficacy assessments; however, Bandura (1997) states, "There is no all-purpose measure of perceiving self-efficacy" and recommends modifying self-efficacy assessments specific to a specific domain or topic area (p. 307). There is no self-efficacy assessment related to home safety; therefore, the investigator adapted the assessment to the study context.

The "self-efficacy assessment" is a 10-item assessment that measures self-efficacy using a confidence scale of "not confident at all" to "completely confident." The scale assumes all questions are weighted equally. The assessment was scored out of 20 points. The investigator has exceptional experience developing self-efficacy

assessments from mentorship received while contributing to various research teams. The research teams comprised expert researchers with a strong track record in assessment development for previous grant proposals at the Rehabilitation, Research, Design, and Disability (R2D2) Center. The R2D2 Center is renowned for its decades-long utilization of perceived learning evaluations in various courses (R2D2 Center, 2004b). OT students piloted the assessment before data collection.

Knowledge of Home Safety Assessments

The Home Safety Assessment consisted of 14 questions for participants to rate their knowledge of home safety assessments (see Appendix E). Participants rated their knowledge of each assessment on a scale from “novice” to “expert”. OT students piloted the assessment before data collection (see “Pilot work” above for more details). The home safety assessment knowledge assessment was scored out of 84 points.

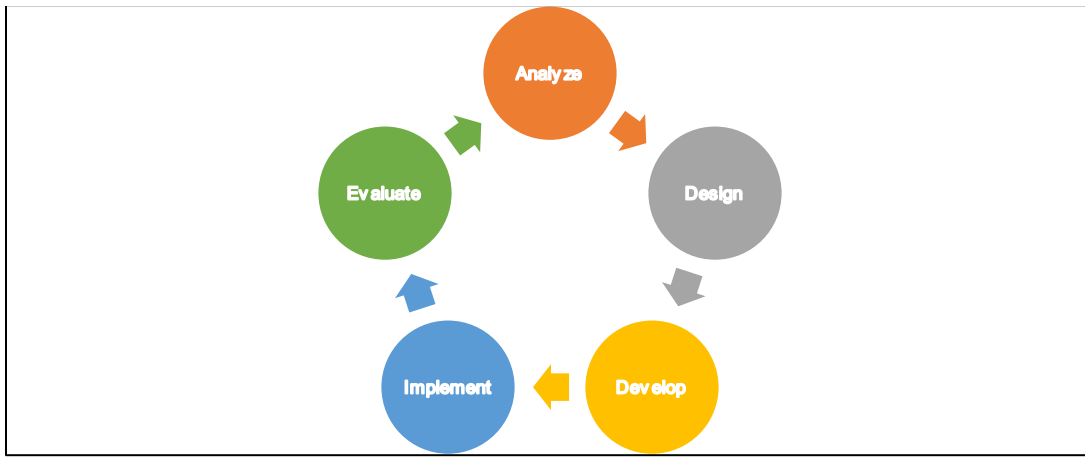
The identified instruments provided a foundation for the course content that will package the intervention. Once the relevant instruments were determined, the course development content proceeded.

Course Content Development

The course content development section provides specifics on a model used to guide development, details of the five courses, and how they were applied. There is no existing home safety course that incorporates the use of AHP as an educational tool. Therefore, the investigator developed an inaugural home safety course. To guide the course development process, the ADDIE model was used as a tool to structure and organize course content (see Figure 4). ADDIE is an acronym that stands for **A**nalyze, **D**esign, **D**evelop, **I**mplement, and **E**valuate (University of Washington Bothell, n.d.).

Figure 4.

ADDIE Model



Note: Adapted from “ADDIE Model: ADDIE Model For Instructional Design” by the International Society for Educational Technology, n.d., <https://www.isfet.org/pages/addie-model>

ADDIE Model Implementation

The ADDIE model provided guidance using a cyclical process to analyze, design, develop, implement, and evaluate, as shown in Figure 4. The University of Washington describes the ADDIE process and what is incorporated into each phase (University of Washington Bothell, n.d.). Each phase of the ADDIE model will be described in the context of the present research study (University of Washington Bothell, n.d.).

Analysis Phase. The investigator developed course learning objectives and goals and chose the learning environment and the audience for the course.

Design Phase. The investigator determined how to organize, present, and arrange the home safety content. Additionally, the investigator selected appropriate measures to assess student knowledge.

Implementation Phase. The investigator selected methods to motivate participants and determine the sufficient timing of the course.

Evaluation Phase. Pilot work was conducted to review materials before initiating the study. Relevant feedback was implemented to improve the overall course.

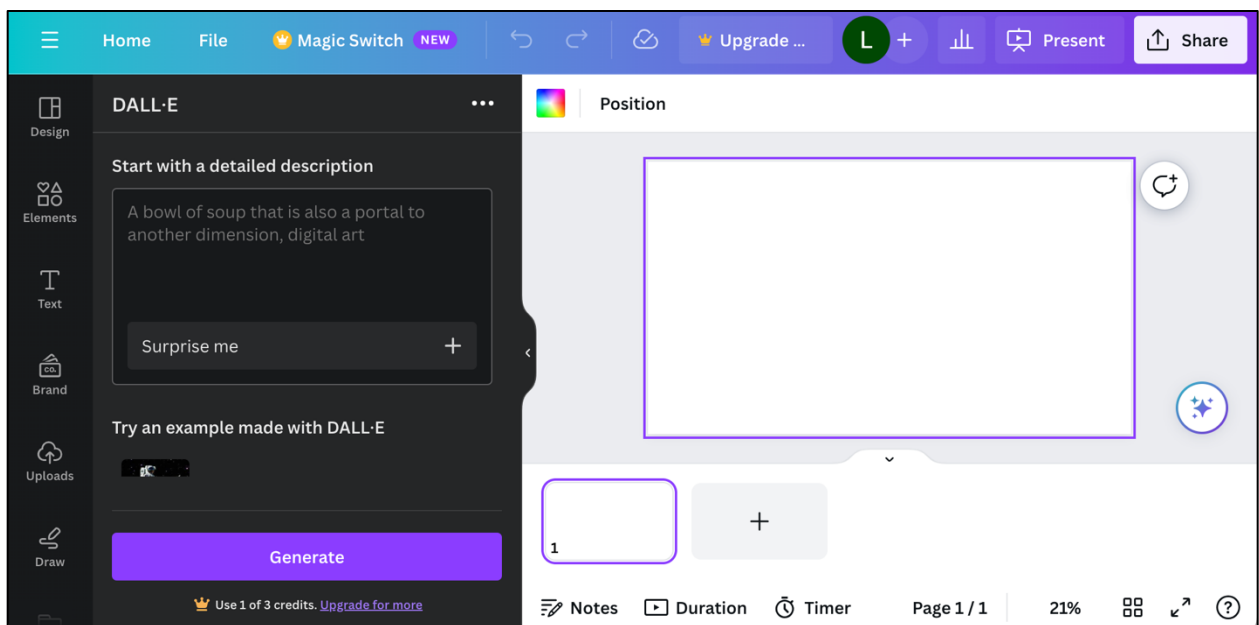
Development of Canvas Course Courses

AI-Generated Images

The investigator utilized the Canva Artificial Intelligence (AI) Generator to create images of the fictitious patient, primary entrance, living room, kitchen, bathroom, and bedroom. The AI generator is free with limitations on the number of downloads per month. The AI generator has a box on the left side that states “Start with a detailed description” with a text box beneath it. In this textbox, users are to describe their desired photograph (See Figure 5).

Figure 5

Screenshot of Canva AI Generator Website



The first image the investigator wanted to generate was a picture of a full-size bathroom with a toilet, sink, and bathtub. The investigator typed into the detailed description, “bathroom”, which generated a very modern upper-middle-class style (Figure 6) and sometimes warped-looking bathrooms (Figure 7).

Figure 6

AI-Generated Bathroom – Upper Middle Class.



Figure 7

AI-generated photo of “Warped” bathroom.



Note. The red box highlights where the AI was not generated correctly.

For the study and geographical location, in Milwaukee, WI, it is essential to note that the poverty level is nearly double the amount of the U.S. national average (Milwaukee, WI | Data USA, n.d.). Additionally, the investigator, an OT in Milwaukee, has considerable experience working with low-middle-class older adults and therefore wanted the case study to depict an individual of low-middle socioeconomic status.

The investigator took a problem-solving approach to obtain preferred images for the case study. When considering a bathroom with a middle-low socioeconomic status, common characteristics are outdated appliances and aesthetic appearance. Next, the researcher arbitrarily entered the “1940s bathroom” (Figure 8) into the description box to see if it would generate the desired images. This methodological process was iteratively applied to AI-generated photos of the primary entrance, living room, kitchen, and bedroom. This process took significant time due to revisiting and readjusting wording to achieve the desired photos for each room. See Figure 8 for the selected bathroom.

Figure 8

A photo of the selected bathroom was used in the case study.



The following key AI-generated image was that of the fictitious patient, Sheila. The investigator wanted to select a patient of minority descent, specifically the Hispanic and Latino population, due to their projected increase in the U.S. by the year 2029 (Pearson et al., 2019). Furthermore, the Latino and Hispanic population is among the many minority populations that experience poverty; specifically, the Latino and Hispanic individuals experience poverty at double the rate of white individuals (Baumgartner et al., 2021). Considering the predominantly white demographic of OTs and students (Banks, 2022), there is an imperative need to equip them to engage with diverse clients effectively. The absence of diversity emphasizes the critical need to promote diversity within the OT profession.

Canvas Course Development

Following the guidance provided by the ADDIE model, two canvas courses were created, one for the intervention group and the second for the control group, which were identical except for the intervention piece in “Step 3” which will be elaborated upon in this section. Courses consisted of five sequential courses, termed “steps”, strategically designed to guide students from the beginning to the end of the course. The concern for student fatigue determined the investigator’s decision to create only five steps after a full day of class. Additionally, the investigator wanted to assess the impact of a short course before developing a comprehensive course. The course was online. However, data collection occurred in person in a computer lab for a controlled environment for internal validity.

Courses were clearly labeled, and the investigator activated the “complete all coursework” function in each course to ensure students did not skip ahead or miss

content. Videos, a leading information delivery mechanism, were selected as the primary mode of instruction for the Canvas course. Evidence supports the use of videos as an educational tool (Brame, 2016) that can increase student engagement (Lowenthal et al., 2020, as cited in Kay & Mann, 2022) and improve student learning (Hsin & Cigas, 2013, as mentioned in (Kay & Mann, 2022)). However, Brame (2016) notes that instructors must effectively use videos by considering cognitive load, student engagement, and active learning. Many reports have discussed boredom and decreased student involvement in online courses. Therefore, different methods were considered to enhance student attention and watch each video's entire duration .

Some solutions to student boredom included short videos (Kosterelioglu, 2016; Brame, 2016), conversational language, speaking quickly with enthusiasm, and packaging videos with interactive questions (Brame, 2016). In the Canvas courses, the investigator implemented the above recommendations to minimize the risk of student boredom. Additionally, the investigator used EdPuzzle, a learning management system incorporating interactive content into pre-existing (e.g., TED Talks or YouTube videos). The platform allows instructors to view percentages of each video watched and at what time they watched. Additionally, the instructor may create multiple-choice or open-ended questions dispersed throughout the video. The platform grades the multiple choice questions and provides a bank for instructors to manually grade open-ended responses of each student (EdPuzzle | Online Tools for Teaching & Learning, n.d.). This tool has been used successfully in the University of Wisconsin-Milwaukee campus context for coursework purposes—for example, a masters-level research design course. The layout of both Canvas courses, including content and duration, were identical

except for course three. Details of courses are described in more detail below and can be found in Appendix F and G.

Instructions. The first course was titled “START HERE: INSTRUCTIONS”. Once participants read the course instructions, they completed a quiz to confirm they had signed a nondisclosure agreement before participation.

Step 1: Home Safety and Self-Efficacy – Part A. The intervention and control group completed two pretests: 1) self-efficacy assessment and 2) Perceived Knowledge Assessment. After completing the assessments, both groups were directed to the next course.

Step 2: Home Safety Presentation Video. Both groups watched the same presentation video on EdPuzzle (duration 19 minutes and five seconds). The investigator chose the platform EdPuzzle since it can ask participants questions during the video and does not allow skipping ahead. The EdPuzzle link was included in the Step 2 course.

Step 3: Intervention and Control Group Comparison

Step 3 of the intervention course consisted of an AHP Tutorial. Only the intervention group received the AHP tutorial. Participants in the intervention group watched an AHP tutorial (duration 23 minutes and 50 seconds) and explored the web-based assessment. Participants were asked to go through the AHP assessment independently in preparation for using it in the case study in Step 4.

Step 3 of the control group course included a TED Talk, the Safe at Home Checklist, and the AOTA Home Health Evaluation Checklist. The TED Talk was the placebo in place of the AHP tutorial. Participants in the control group were instructed to

watch a TED Talk video titled, “Roger Wong: How to keep your elderly parents safe and in their home longer” (duration 19 minutes and 13 seconds), and after watching the video, participants completed an open-ended reflection quiz about the TED talk. Next, control group participants were instructed to independently examine and familiarize themselves with two assessments using the links provided - Rebuilding Together Safe at Home Checklist and OT Home Health Evaluation Checklist & Quality Measures.

Step 4: Case Study. Content for Step 4 was identical for both groups. Participants participated in an interactive case study video activity. The case study presented a fictitious client scenario starting from the primary entrance of the home (See Figure 9). Participants were asked about the primary entrance, living room, kitchen, bathroom, and bedroom.

Figure 9.

AI-generated photo of a fictitious client.



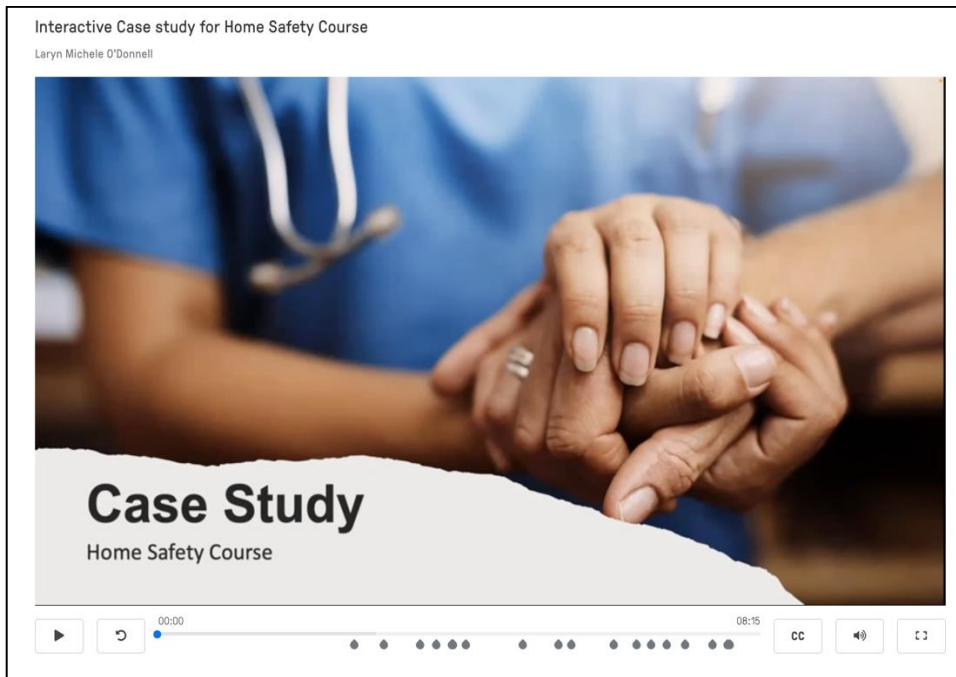
When “entering” each room virtually, information about the client or space was presented in addition to a photo. For example, “1) List 2-3 additional questions you would ask Sheila related to the bathroom, and 2) list up to three safety hazards you observe in Sheila's bathroom”. Participants were asked to use their assigned assessment to assist them as the case study progressed. See Appendix H for images of the primary entrance and rooms in the case study.

The case study video included eight minutes and 15 seconds of audio (see Appendix I). Within that timeframe, participants were asked eighteen open-ended questions (see Appendix J), extending the participation in the activity to roughly 40 minutes. Figure 10 is an example of the video timing and how questions were dispersed throughout the video. For example, participants listened to two minutes and 41 seconds of the presentation video before the first open-ended question appeared, asking participants to describe what they had learned briefly. The duration of answering questions varied from 1-5 minutes, depending on the question.

Step 5: Home Safety and Self-Efficacy - Part B. Step five is the final course module identical for both groups. Participants completed a total of four quizzes: 1) Home Safety Assessment Knowledge (posttest), 2) Self-efficacy (posttest), 3) Retrospective Perceived Knowledge (pretest), and 4) Retrospective Perceived Knowledge (posttest). After completing the final page, participants received a message stating they completed the course.

Figure 10

Example of Question Timing in the Case Study Video



Note: The tear-drop-shaped icons depict upcoming questions. Some questions overlap.

Disclaimer. At the beginning of the activity, a disclaimer was issued stating, “1) This is a home safety exercise. It is not comprehensive and does not include all measures, questions, or steps required for a complete evaluation and should not be substituted for professional guidance. 2) No real clients were used in this presentation. Sheila is a fictional client, and 3) Many images were created using Canva AI Generator. All other images have citations available upon request.”

Participants

Upon IRB approval, eligible participants were recruited from two cohorts of the Master of OT program at the University of Wisconsin-Milwaukee. To qualify for the study, participants had to meet the following criteria: 1) enrollment in an accredited

United States OT program and 2) speaking and understanding English as a first or second language. All 17 students were recruited on campus and via email from the investigator. Flyers were handed out in person with a QR code to access a Qualtrics assessment and Consent form, and emails were sent with the Qualtrics assessment link and Consent form (see Appendix K). The investigator informed participants (in person and in writing via email and consent form) that participation had no effect on their course grades and was voluntary. Participants were required to provide informed consent before participating in the study.

Procedures

The following section describes the detailed process of quantitative and qualitative data collection. Before data collection, the investigator interacted with the participants three times: 1) recruitment (in-person), 2) recruitment online for screening, and 3) in-person data collection. Three interactions occurred due to convenience and time constraints. Participants were entered into a drawing for one \$200 gift card to Amazon and three \$100 gift cards to Amazon. Anyone who completed the assessment and provided their contact information was entered into the drawing regardless of their participation or completion of the study. The investigator sent three emails to the two OT cohorts describing the upcoming study and to volunteer if interested. A total of 21 participants were recruited for the study. However, two participants could not participate in the study, and two requested to complete the study online. Given the different procedures involved with the asynchronous online survey, these participants and those who did not participate in the study were excluded from the sample. Therefore, a total of 17 participants completed the study.

Data Collection

All participants consented to the study. Using a random coin generator, participants were randomly assigned to the experimental or control group. Once participants were randomly assigned, the investigator recorded the participants' first and last names and group assignments in an encrypted Excel file. Participants were given a participant number in the order they arrived at the study, which will be used to ensure anonymity. The courses on Canvas were named “Group 1: Home Safety” (Intervention) and “Group 2: Home Safety” for control. The five courses included presentations, tutorials, videos, quizzes, and an interactive case study. The investigator added participants to their assigned canvas group in real-time on Canvas before participants entered the computer lab.

Quantitative Procedure

Eligible participants completed one assessment that included screening, consent, and demographics. Participants received the assessment link via paper flyer with a QR code and email. See Appendix L for recruitment materials. Interested individuals completed the Qualtrics assessment. At the beginning of the assessment, the IRB consent form was included on the first page. Individuals were asked to “agree” or “disagree” in providing their consent to participate in the study. Then, they filled out a screening assessment with questions related to inclusion criteria. Next, demographic questions, such as gender and ethnicity, were asked to describe the sample. Other questions in the assessment were related to their level of home safety education and experience, year in program, and clinical fieldwork experience. The assessment asked participants which in-person day they would attend.

The data collection processes were repeated 24 hours apart for participant convenience with identical procedures. Three research assistants were involved in the data collection process. The investigator was blinded to the data collection process to minimize the experimenter effect or the risk of influencing participant behavior and study results (APA Dictionary of Psychology, n.d.; Monaghan et al., 2021). Additionally, allocation concealment was implemented to prevent selection bias (Monaghan et al., 2021).

When participants arrived, they were asked by the investigator to remain in the hallway until further instruction. The investigator instructed participants to line up in the order they arrived. While participants were in line, the investigator handed each participant a paper NDA to sign before participating in the study. After signing, participants waited in line roughly 30 to 50 feet away from the investigator's table. Next, participants were called up individually to the investigator's table. On the table, the investigator had a computer to record information, a closed folder of the signed NDAs, and a bin of headphones. Each participant was asked to provide their first name, last name, and whether they signed the NDA and email. After adding a participant's name to their randomly assigned course, they received an email from Canvas and a notification on the Canvas dashboard to accept the course invitation. After they were assigned to a course, they were instructed to grab one pair of headphones and enter the computer lab. One research assistant waited to direct participants to a desktop computer that was logged into campus with the canvas login page up and ready for the participant to log in with their username and password. Participants from the two cohorts had previous access to Canvas from courses in their MSOT program.

Qualitative Procedure

A content analysis approach was utilized to analyze the open-ended response documents, often called analyzing documents (Content Analysis, 2016; Elo & Kyngäs, 2008). The present study used content analysis to explore open-ended questions to supplement quantitative data and identify trends in the open-ended responses (Content Analysis, 2016). A specific approach within content analysis is conducting a conceptual analysis, defined as “a concept chosen for examination, and the analysis involves quantifying and counting its presence.” (Content Analysis, 2016) was used. Rather than using concepts for the data analysis, the researcher will use the term “category” over “concept” since it is suggested by researchers and prevalent in the literature (Elo & Kyngäs, 2008).

The investigator followed a model Elo and Kyngäs (2008) developed to describe qualitative analysis in a conceptual form. At the time of publication, minimal research described a systematic process for content data analysis. To this day, qualitative researchers refer to these methods (Bengtsson, 2016; Erlingsson & Brysiewicz, 2017; Lindgren et al., 2020; Moser & Korstjens, 2018). The model includes three main phases: preparation, organizing, and reporting (Elo & Kyngäs, 2008).

Preparation. In the preparation phase, the investigator chose a unit of analysis, “the unit of analysis can also be a letter, word, sentence, portion of pages or words, the number of participants in discussion or the time used for discussion” (Robson, 1993 & Beck, 2004, as cited in Elo & Kyngäs, 2008). Words were selected as the unit of analysis. Additionally, when the investigator familiarized themselves with the purpose of

the course and the case study activity to determine details of the analysis (Cavanaugh, 1997, as cited in Elo & Kyngäs, 2008).

Organizing. In the organizing phase, the investigator read through the open-ended responses, which equated to 36 pages with 989 lines of text, numerous times. The investigator organized the data by question. The open coding process, reading while simultaneously writing down keywords and potential categories, began before condensing data into categories (Elo & Kyngäs, 2008). Next, using MaxQDA Analytics Pro 24, text was assigned and coded according to their general and subcategory. After, the investigator combined broad categories into main categories, also known as the abstraction process (Elo & Kyngäs, 2008; Lindgren et al., 2020) as shown in Figure 11. Codes were peer debriefed by a qualitative expert, which will be described further in the data analysis section.

Reporting. In the reporting phase, the analysis process is described. See the Data Analysis section below for a description of the qualitative data analysis.

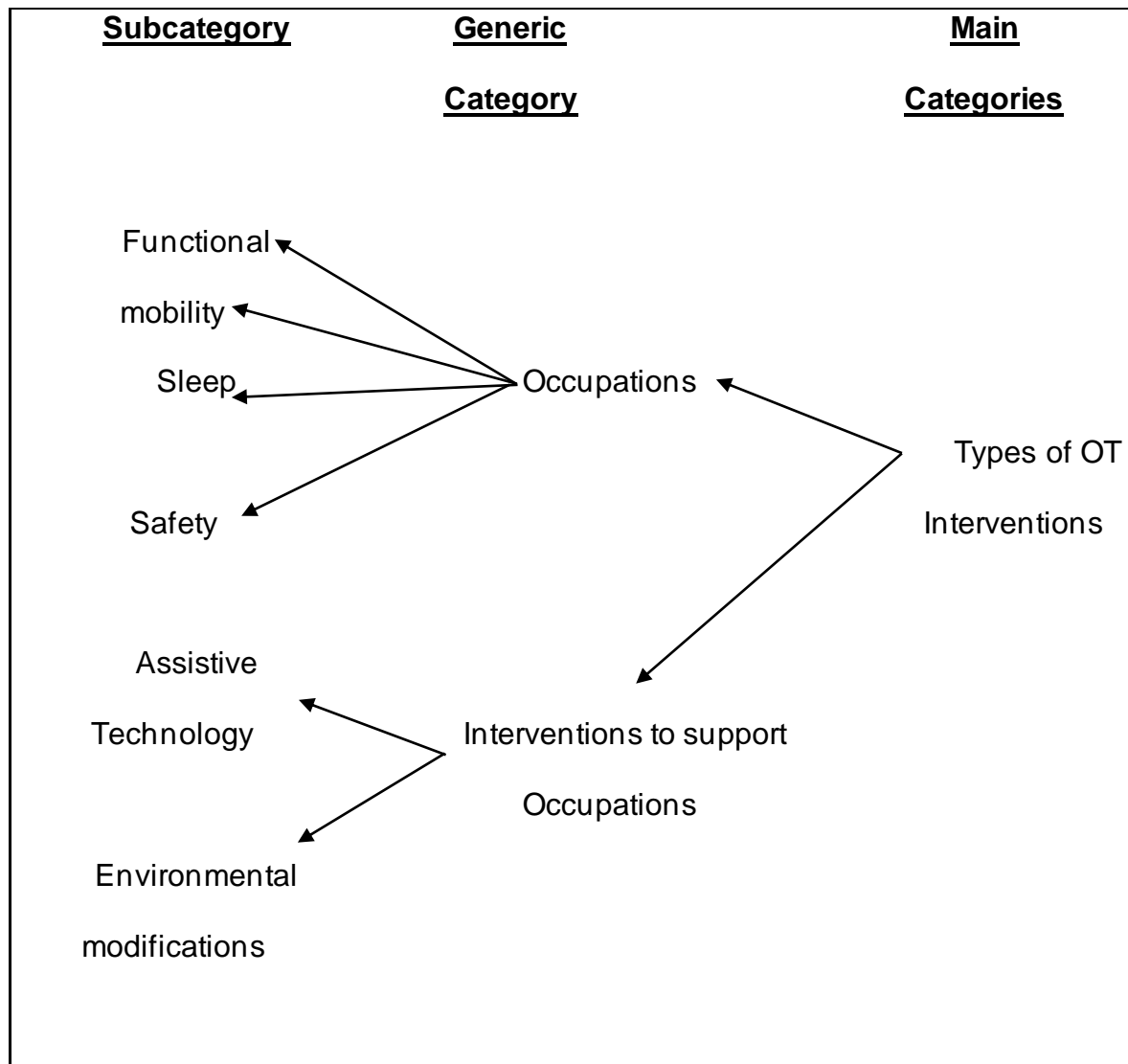
Data Analyses

Quantitative Data Analysis

Once all data were collected, the investigator exported the Canvas files into an Excel file and checked for missing data and completeness. Next, the investigator organized the data to import it into SPSS by creating an SPSS codebook, which identified the variable name, variable type, coding instructions, and type of measurement scale (see Appendix M). The Excel file was converted into a .csv file and opened in Social Science (SPSS) software version 29.0.1.0.

Figure 11.

Abstraction Process



Feasibility studies often have a small sample size (Orsmond & Cohn, 2015b). The literature notes that the precise sample size for feasibility is unclear (Lewis et al., 2021). For example, the literature supports sample sizes ranging from 10 to 12 participants or 60-70 participants (Lewis et al., 2021). A total of nine participants were randomly assigned to the control group and eight to the intervention group (n=17).

The investigator planned to control for confounding variables, however, due to the small sample size, participant scores were reviewed item by item for each test.-A

biostatistician was consulted during the data analysis process.

Descriptive statistics were conducted to describe the dataset and participant characteristics. Dependent variables were analyzed using range, mean, standard deviation, variance, skewness, and kurtosis. Differences in pre and post-test scores by group were described using frequencies, percentages, and means. A paired samples t-test was performed to investigate a difference in both groups' overall pre and post-test scores per assessment. A one-way ANOVA was conducted to determine whether there was a statistically significant increase in scores by group. An item-by-item analysis per participant was conducted to further examine the effectiveness of the intervention, for instance why they were significant or not significant which may be due to covariates (home safety experience, year in OT program, and fieldwork experience). The ANOVA analyses were compared to the ANCOVA analyses to detect difference in p-values with and without the covariates.

A post-hoc multivariate analysis of variance (MANOVA) was conducted to examine the potential influence of covariates on multiple dependent variables. The MANOVA examined the impact of year in OT program, home safety experience, and fieldwork experience on the pre and post-test scores of the three assessments to explore potential relationships.

Components of the analyses were performed using a one-tailed test at an adjusted alpha level of $p=0.0167$ after implementation of the Bonferroni correction. The analyses used a one-tailed test due to the investigator's directional hypothesis of

investigating whether the intervention will improve home safety assessment knowledge, self-efficacy, and perceived knowledge (Portney, 2020). The investigator is confident that there are no negligible or unethical consequences using a one-tailed test (FAQ: What Are the Differences between One-Tailed and Two-Tailed Tests?, n.d.).

Qualitative Data Analysis

Before conducting qualitative analyses, the investigator consulted with a qualitative expert. The investigator used a conventional approach to content analysis due to the limited research (Hsieh & Shannon, 2005). Using this approach, the investigator avoided the use of predetermined themes but rather analyzed data inductively to let the categories and themes naturally emerge (Content Analysis, 2016). The investigator consulted a qualitative expert with over two decades of experience to ensure the rigor of the data analysis.

To access the open-ended response text, data were exported from EdPuzzle into a Word document. Data were deidentified. The deidentified text was imported into the MaxQDA software. The investigator conducted a comprehensive review of the eighteen open-ended questions, equating to roughly 1500 lines of text.

Each of the 18 open-ended questions was examined individually. Eight questions were excluded as they did not pertain to the course learning objectives. While reviewing the text, the investigator wrote down keywords and potential themes and then combined and reworded potential theme categories (See Appendix N). The potential themes were reviewed and decided by the investigator to combine, re-word, or remove. Codes were input into MaxQDA Analytics Pro 24 software (see Appendix P for the second round of

coded documents). The investigator reviewed the text of each question an additional time to ensure codes were correctly assigned.

The investigator entered all codes and subcodes into MaxQDA with appropriate labels (See Appendix Q). The investigator continued to revise the code category by adding a subcategory under a large theme or removing subthemes into main theme categories (See Appendix N). Next, the investigator used the MaxQDA Smart Coding Tool. The Smart Coding Tool compiles coded text segments based on their assigned code (Code Smarter Not Harder - How the Smart Coding Tool Can Help You in Your Advanced Rounds of Coding, 2021). Each code was carefully examined, and the investigator quantified the number of participants associated with each code, noting their group assignment (intervention or control). The themes were quantitatively organized, incorporating participant numbers and group assignments into a table.

In the comparative analysis between intervention and control groups, the investigator initially considered quantity, followed by an examination of participant numbers. Covariates such as year and home safety experience were considered to provide an in-depth understanding of differences between groups while considering covariates (e.g., previous home safety experience, fieldwork experience, and year in the OT program).

Trustworthiness

To enhance the trustworthiness of the findings, a PhD candidate known for their expertise in qualitative data analysis, independently reviewed the open-ended transcripts of the 10 questions through a process called peer debriefing (Code Smarter Not Harder - How the Smart Coding Tool Can Help You in Your Advanced Rounds of

Coding, 2021). Peer debriefing is a technique used by many qualitative researchers because it, “allows a qualified peer researcher to review and assess transcripts, emerging and final categories from those transcripts, and the final themes or findings of a given study” (Janesick, 2015). The peer debriefer, sometimes termed “outside reader”, “auditor”, or “peer reviewer”, assesses the researcher’s document to evaluate and provide feedback. For example, if key points were missed, overemphasized, or overlooked by the researcher (Janesick, 2015).

The investigator contacted the PhD candidate (who was removed from the study) to perform the peer debriefing. Once codes and themes were established by the investigator, the coding documents were emailed to the peer debriefer. Following the review, the peer debriefer provided comments, for instance, recommendations to reduce several general codes into one code, and to combine several subthemes under one theme. After evaluating the peer debriefer feedback, the investigator implemented the recommended changes.

RESULTS

Data Preparation

Before conducting statistical analyses, data were reviewed for accuracy and to detect potential outliers. Preliminary analysis identified one participant who did not complete the post-self-efficacy quiz and therefore was excluded from the self-efficacy analyses. Results are reported based on univariate analyses, such as descriptive statistics of the study sample. Bivariate analyses including paired and independent samples t-tests was performed on total scores of pre-tests and post-tests of the three assessments, with a focus on their assigned group (intervention or control). Qualitative results are reported based on an inductive content analysis.

Table 1

Descriptive Variables	N	%
<hr/>		
Group		
Intervention	8	47.10%
Control	9	52.90%
Gender		
Female	17	100%
Ethnicity		
American Indian	1	5.90%
Black or		
African	1	5.90%
American		
Multiracial	1	5.90%

White	14	82.40%
Home Safety Experience		
Yes	3	17.64%
No	14	82.35%
Year in OT Program		
Year 1	12	70.60%
Year 2	5	29.40%
Fieldwork Experience		
I have not completed level I fieldwork yet	12	70.60%
I have completed/in the process of completing level I fieldwork	5	29.40%

Descriptive Data of Entire Sample

Seventeen participants completed the study. Demographic characteristics (gender, ethnicity, year in OT program, home safety experience, and fieldwork experience) are shown in Table 1. Frequency and percent were used to describe the dataset. In the entire sample, all participants

reported they identified as female. The ethnicity of the sample included one African American or Black participant, one multiracial participant, and 14 white participants. The sample included five participants with fieldwork experience, three participants with home safety experience (see Table 2 for a description of home safety experience), five participants with level II fieldwork experience, and 12 participants who selected they have not completed fieldwork or are in the process of completing level I fieldwork.

Table 2

Home Safety Experience Description

Participant #	Group	Response
Participant 2	Control	"Home Health Aid job"
Participant 8	Intervention	"undergraduate studies"
Participant 13	Control	"Worked in Long Term Care/early-stage dementia units"

Descriptive Data by Group

Eight participants were in the control group and nine in the intervention group. The control group was comprised of eight first-year students and one second-year student. The intervention group was comprised of four first-year students and four second-year students. See Table 3 for descriptive data by group. The control group included eight participants with no fieldwork experience and one with fieldwork experience. The intervention group was comprised of four participants with fieldwork experience and four

participants without fieldwork experience. One individual in the intervention group reported home safety experience and two individuals in the control group reported home safety experience.

Table 3
Descriptive Data by Group

Variables	Intervention Group (n=8)		Control Group (n=9)	
	N	%	N	%
Gender				
Female	8	100%	9	100%
Ethnicity				
American Indian			1	11.11%
Black or AA	1	12.50%		
Multiracial	1	12.50%		
White	7	87.50%	7	77.77%
Home Safety Experience				
				66.66%

Yes	1	12.5%	2	22.22%
No	7	%	7	77.77%
Program				
year				
Year				
1	4	50%	8	88.88%
Year				
2	4	50%	1	11.11%
Fieldwork				
Experience				
yes	4	50%	1	11.11%
no	4	50%	8	88.88%

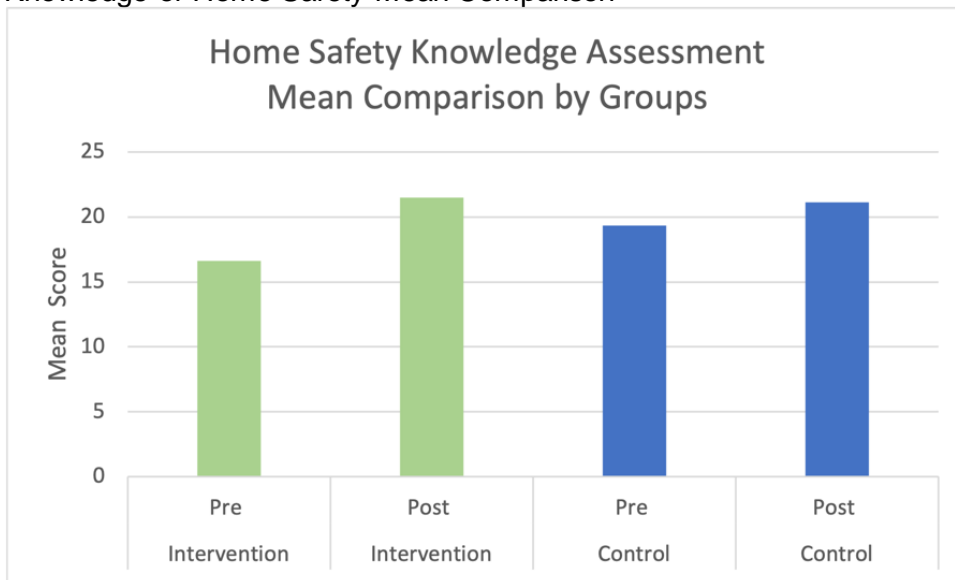
Demographic Post Hoc Findings

While not included in the original research questions, an additional finding emerged after reviewing the results of the descriptive characteristics. Demographic characteristics from the study sample differs from the occupational therapy population. For instance, the OT population reports ethnicities including 4.9% black or African American, does not report multiracial statistics, and reports 75.4% of the population is white. Additionally, the OT population reports 75% of female practitioners are females, which the study was comprised of all females. Although the study sample displayed a greater diversity of participants in comparison to the population, it underscores the continuing diversity issues within the occupational therapy profession, including ethnicity

(Banks, 2022) and gender (“Policy E.15: Affirming Gender Diversity and Identity”, 2021). The OT profession must promote diversity among practitioners and students as advocated for in recent occupational therapy literature (Banks, 2022; Brown et al., 2021).

Figure 11

Knowledge of Home Safety Mean Comparison



Hypothesis 1 Results

The researcher hypothesized participation in the study, regardless of group assignment, would yield elevated post-test scores. To determine whether there were statistically significant differences between all pre-posttest scores, a paired samples t-test was performed for each assessment. Furthermore, the investigator visually examined the mean pre-posttest scores across the three assessments to detect potential trends. This process involved comparing mean pre and post-test scores of the intervention and control group for the knowledge of home safety assessments (See Figure 12), self-efficacy assessment (see figure 13) and perceived knowledge assessment (see figure 14). Visually, the graphs show there was a difference in average pre and posttest scores on in both groups for all of the assessments, and that

specifically the intervention group appeared to have a larger increase in scores, compared to the control group, from pre to post-test.

Figure 12
Self-Efficacy Mean Comparison

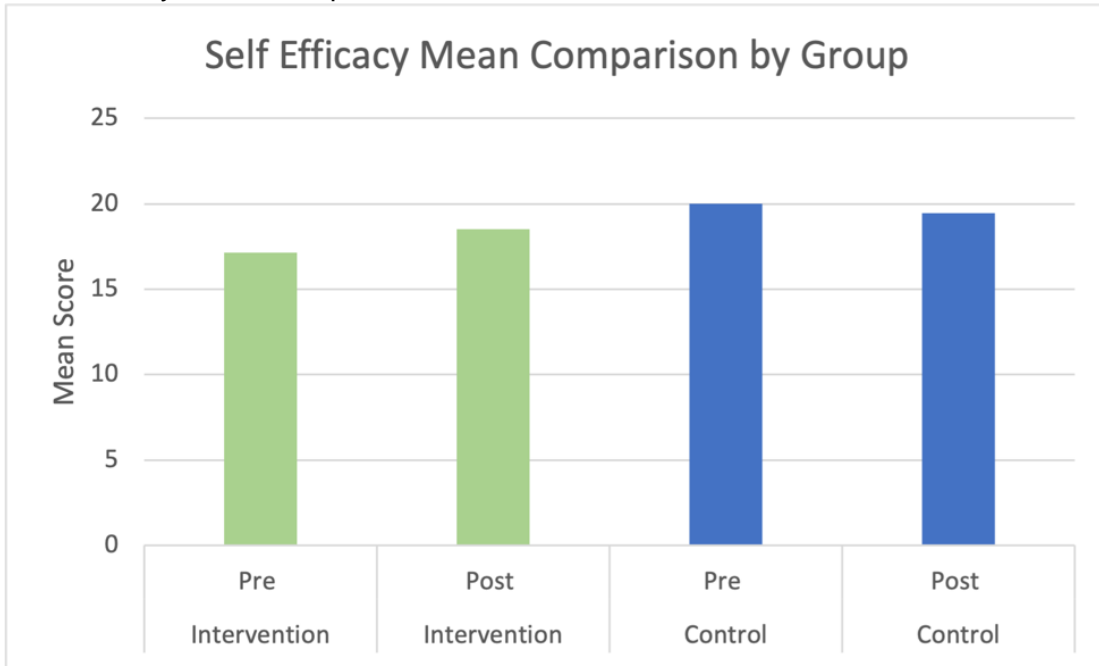
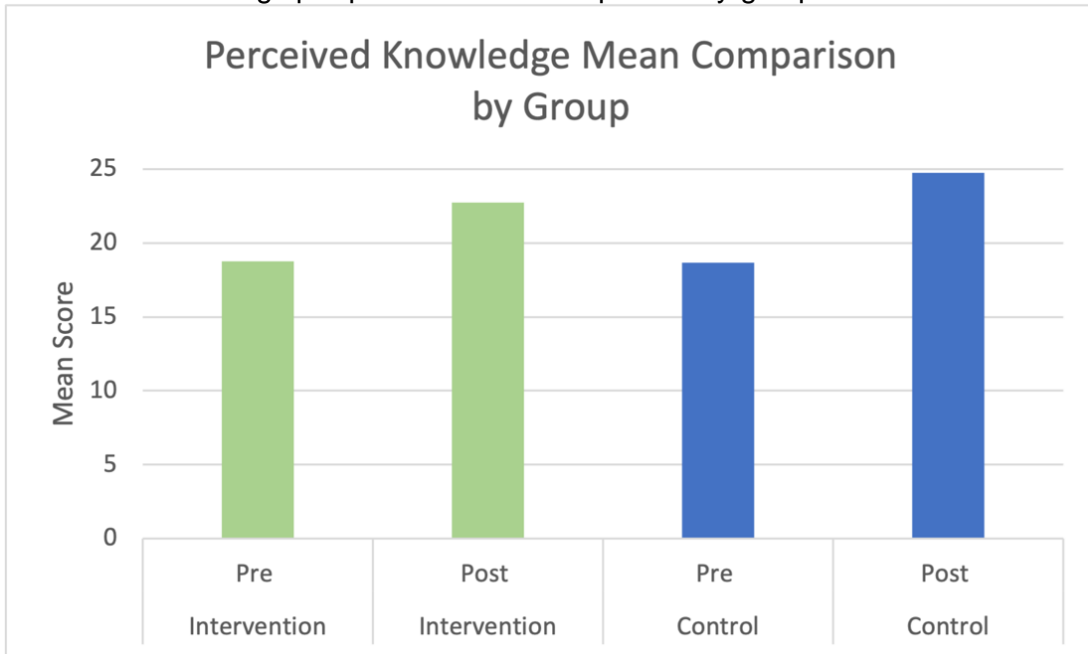


Figure 13
Perceived Knowledge pre-posttest score comparison by group



Outliers from Hypothesis 1 Results. Before running the statistical analyses, the investigator visualized the data and identified participants 1 and 2 as outliers in comparison to the other 15 participants. When looking at the demographic characteristics of Participant 1, they were in the control group, a first-year student, with no fieldwork experience and no home safety experience. Participant 2 was also in the control group with no fieldwork experience and no home safety experience. See Appendix O to view graphs of raw scores across the three assessments.

Hypothesis 1 Paired Samples T-Test Results. The Home Safety Assessment pre-test percentage score averaged 21.24% (M=18.06, SD=5.25) while the post-test percentage score averaged 25.06% (M=21.30, SD=7.15), with a statistically significant difference ($p < 0.003$). The self-efficacy assessment average pretest score was 71.24% (M=17.81, SD=2.401) compared to a posttest percentage score of 79.06% (M=21.30, SD=7.15), results were not statistically significant ($p > 0.05$). The perceived ability pretest score average was 53.46% (M=18.71, SD=2.733), and the average posttest score percentage of 68.06% (M=23.82, SD=3.76) with a statistically significant difference ($P < 0.001$). Additionally, pre and post-test mean scores were compared across all three assessments. Results indicate that 82.35% of participants improved home safety assessment knowledge scores, 75.00% of participants improved self-efficacy assessment scores, and 94.11% of participants improved perceived efficacy scores.

Applying the Bonferroni Method for Hypotheses 2 and 3

Before continuing on to the results of hypotheses 2 and 3, it is important to note that the Bonferroni correction was a method used for both data analyses. The statistical analyses for hypothesis 2 involved conducting three paired samples t-tests, and the

statistical analyses for hypothesis 3 used three independent t-tests. The use of multiple statistical tests for one analysis can increase the risk of a type I error (Armstrong, 2014), or incorrectly reject the null hypothesis (Schreffler & Huecker, 2023). Armstrong (2014) reviewed research articles published in three optometric journals and found that the Bonferroni method was most commonly used when conducting multiple t-tests. The Bonferroni method adjusts the significance level per the number of statistical tests that will be run. Both hypotheses 2 and 3 required three t-tests, therefore the desired significance level of 0.05 was divided by the number of comparisons for each hypothesis: $\alpha = \frac{0.05}{3} \approx 0.0167$. Therefore, the significance level used was 0.0167.

Hypothesis 2 Results

The investigator hypothesized that participants in the intervention group would have higher post-test scores on all of the assessments. To calculate the response to intervention across all three assessments, three independent sample t-tests were performed at a significance level of 0.0167. The independent sample t-test findings did not reveal significant differences between the intervention and control groups across all three tests. Specifically, no significant differences were observed for the home safety assessment knowledge test ($t(15)=1.529$, $p = 0.074$; see Figure 7), the self-efficacy test ($t(14)=1.06$, $p = 0.152$; see Figure 8), or the perceived knowledge test ($t(15)=-1.894$, $p = 0.039$; see Figure 9).

Additionally, the average mean difference between the intervention and control group scores was calculated with each of the three assessments. On the self-efficacy assessment, the intervention group demonstrated an average mean difference of 2.92, 95% confidence interval (CI) [0.298, 5.55] and the control group average mean

difference was 0.874, 95% CI [-1.60, 3.347]. Next, the perceived knowledge assessment results revealed the intervention group exhibited an average mean score of 4.059, 95% [2.28, 5.83] and the control group average mean difference was 6.059, 95% CI [4.39, 7.73]. For the knowledge of home safety assessments, the intervention group revealed an average mean difference of pre to posttest scores of 5.11, 95% CI [2.28, 5.83], and the control group revealed an average mean difference of 1.576, 95% CI [-1.09, 4.24].

Table 4

Average Mean Score Estimates

Dependent Variable	Group	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
SelfEfficacy_Difference	Intervention	2.924 ^a	1.224	.298	5.549
	Control	.874 ^a	1.153	-1.600	3.347
PerceivedDifficulty_Difference	Intervention	4.059 ^a	.826	2.288	5.830
	Control	6.059 ^a	.778	4.390	7.728
HomeSafetyKnowledge_Difference	Intervention	5.114 ^a	1.322	2.280	7.948
	Control	1.576 ^a	1.245	-1.095	4.248

Hypothesis 3 Results

The investigator theorized that the posttest scores would be influenced by the three covariates: home safety experience, fieldwork experience, and year in OT program. To examine the influence of covariates, independent samples t-tests were conducted at an adjusted alpha level of 0.0167. Each of the assessments (self-efficacy assessment, knowledge of home safety assessments, and perceived knowledge assessment) were investigated independently to assess if any of the covariates impacted post-test scores. For instance, fieldwork experience, home safety experience, and year in OT program were individually investigated for the self-efficacy assessment. This procedure was replicated for the knowledge of home safety assessments and the perceived knowledge assessments.

Fieldwork Experience. Analysis of fieldwork experience revealed a statistically significant difference between two assessments: The knowledge of home safety assessments ($t(15)=-2.495$, $p=0.012$) and the self-efficacy assessment ($t(15)=-2.453$, $p=0.013$).

Year in OT program. Year in OT program had a statistically significant difference in posttest scores for the home safety assessment knowledge assessment ($t(15)=-2.495$, $p=0.012$) and self-efficacy assessment ($t(15)=-2.453$, $p=0.013$).

Home Safety Experience. Home safety experience did not show a statistically significant difference in posttest scores for the knowledge of home safety assessments, self-efficacy assessment or perceived knowledge assessment.

Analysis of Covariance

Three one-way Analyses of Covariance (ANCOVA) were conducted to determine the impact of the AHP intervention on participant posttest scores while controlling for covariates (fieldwork experience, home safety experience, and year in OT program). The investigator conducted an ANOVA (Analysis of Variance) before ANCOVA to compare the p-value change due to the small sample size. It is extremely important to note that the data violated the assumptions of normality for ANOVA and ANCOVA. However, the investigator proceeded with the analyses due to the exploratory nature of the study and the small sample size. Therefore, the following results of the ANCOVA analyses should be interpreted with caution. Below the ANCOVA results are sectioned by each assessment and within each assessment paragraph each of the covariates (home safety experience, fieldwork experience, and OT program year) were controlled for and reported. The Bonferroni correction was used to adjust the alpha level to 0.0167 to minimize the risk of a type 1 error.

Knowledge of home safety assessments. The First covariate tested for the home safety assessment was home safety experience. Results were not statistically significant, $F(3,13)=3.765$, $p=0.73$. However, it should be noted that the p-value demonstrated a decrease in value from the ANOVA result ($p=0.147$) to the ANCOVA result ($p=0.73$). When controlling for fieldwork experience, results were not statistically significant, $F=(3,13)=0.645$, $p=0.435$). Fieldwork experience also showed an increase in p-values from ANOVA ($p=0.147$) to ANCOVA ($p=0.435$). The final covariate controlled for was year in OT program results were not statistically significant, $F=(3,13)=0.645$, $p=0.435$).

Self-Efficacy Assessment. The same covariates were controlled for the self-efficacy assessment. When controlling for home safety experience results were not statistically significant, $F(3,13)=1.47$, $p=0.245$. When controlling for fieldwork experience, results were not statistically significant, $F(3,13)=0.12$, $p=0.74$. Fieldwork experience also showed an increase in p-values from ANOVA ($p=0.24$) to ANCOVA ($p=0.74$). The final covariate controlled for was the year in OT program results were not statistically significant, $F(3,13)=0.12$, $p=0.74$.

Perceived Knowledge Assessment. The same covariates were controlled for the self-efficacy assessment. When controlling for home safety experience results were not statistically significant, $F(3,13)=3.08$, $p=0.10$. When controlling for fieldwork experience, results were not statistically significant, $F(3,13)=3.07$, $p=0.10$. The final covariate controlled for was the year in OT program results were not statistically significant $F(3,13)=3.07$, $p=0.10$. The covariates for all three assessments increased but not a noteworthy change.

Post Hoc Multivariate Analyses of Covariance Findings

A post hoc multivariate analysis of variance (MANOVA) was conducted to look at the combination of dependent variables and the impact of covariates. Results indicated a difference between home safety experience impacted posttest scores on the knowledge of home safety assessments, self-efficacy assessment, and perceived knowledge assessment. However, none of the results were statistically significant. When reviewing the observed effect size (0.983) it suggests that while results were not statistically significant, there are unexplained differences. The MANOVA output produced a large effect size (Cohen's $D=0.983$), suggesting that the difference in

scores may be explained by other factors outside of the intervention itself and therefore in general home safety had a large effect on differences in scores from pre-test to posttest scores across both groups.

Post Hoc Findings: Top Scorers

Furthermore, the investigator wanted to evaluate the top participants for each pre- and posttest. The threshold was determined to be the top 35% of scores due to its alignment with the occupational therapy profession’s standards for the Phi Theta Epsilon honors society. Phi Theta Epsilon Honors is an esteemed award provided by the American Occupational Therapy Association Foundation. One of the eligibility criteria to be considered is that a student's scholarship must not rank lower than the top 35% of their OT class (Pi Theta Epsilon Eligibility for Membership, 2018). Table 6 contains data for the top 35% of participants who scored the highest on the home safety assessment pre-test.

Table 5

Multivariate Tests

Effect		Value	F	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.983	258.132 ^b	<.001	.983
	Wilks' Lambda	.017	258.132 ^b	<.001	.983
	Hotelling's Trace	59.569	258.132 ^b	<.001	.983
	Roy's Largest Root	59.569	258.132 ^b	<.001	.983
Group	Pillai's Trace	.173	.905 ^b	.465	.173

Wilks' Lambda	.827	.905 ^b	.465	.173
Hotelling's	.209	.905 ^b	.465	.173
Trace				
Roy's Largest	.209	.905 ^b	.465	.173
Root				

Table 6

Home Safety Assessment Knowledge: Top 35% Pre-test Scores

Participant ID	Group	% score on test	year in OT program	Fieldwork Experience	Home Safety Experience
6	intervention	20.24%	first	no	no
7	intervention	22.62%	second	no	no
1	control	22.89%	first	no	no
8	intervention	22.00%	second	yes	yes
14	control	36.14%	second	no	no
13	control	37.34%	First	No	Yes

Table 7 contains data for the top 35% of participants who scored the highest on the home safety assessment post-test.

Table 7

Home Safety Assessment Knowledge: Top 35% Post-test Scores

Participant ID	Group	% score on test	year in OT program	Fieldwork Experience	Home Safety Experience
1	control	25.29%	first	no	no
12	control	25.29%	first	no	no
14	control	34.94%	second	no	no
7	Intervention	36.14%	second	yes	no
13	control	40.96%	first	no	yes
8	intervention	44.58%	second	no	yes

Table 8 includes data of the top 35% of pretest scores on the self-efficacy assessment. Data were pulled from the entire sample (intervention and control group). The table is organized in ascending order based on percent score. In the table there are more individuals in the control group who scored higher on the pretest than the intervention group, suggesting variations baseline knowledge. The data for the top 35% of scorers on the self-efficacy posttest can be found in Table 8. The top 35% of pretest scores on the perceived knowledge assessment can also be found below in Table 10.

Table 8

Self-Efficacy Assessment: Top 35% Pre-test Scores

Participant ID	Group	% score on test	year in OT program	Fieldwork Experience	Home Safety Experience
16	control	76.00%	first	no	yes

2	control	80.00%	first	no	yes
4	intervention	80.00%	first	no	yes
10	control	84.00%	first	no	yes
13	control	84.00%	first	no	yes
14	control	84.00%	second	yes	no

Table 9

Self-efficacy Assessment: Top 35% Post-test Scores

Participant ID	Group	% score on test	year in OT program	Fieldwork Experience	Home Safety Experience
3	intervention	84.00%	first	no	no
16	control	90.00%	first	no	no
2	control	95.00%	first	no	yes
14	control	95.00%	second	yes	no
8	intervention	96.00%	Second	yes	yes
9	intervention	96.00%	Second	yes	no

Table 10

Perceived Knowledge Assessment: Top 35% Pre-test Scores

Participant ID	Group	% score on test	year in OT program	Fieldwork Experience	Home Safety Experience
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16	control	54.28%	first	no	yes
7	intervention	60.00%	second	no	no
14	control	60.00%	second	yes	no
5	control	62.85%	first	no	no
8	intervention	65.71%	second	yes	yes
9	intervention	65.71%	second	yes	no

Table 11 includes data of the top 35% of posttest scorers on the perceived knowledge assessment. It is also worth noting that Participant 14 scored in the top 35% of all pre and posttest scores across the three assessments. Participant 14 has previous experience working with AHP.

Table 11

Perceived Knowledge Assessment: Top 35% Post-test Scores

Participant ID	Group	% score on test	year in OT program	Fieldwork Experience	Home Safety Experience
17	intervention	77.14%	first	no	no
2	control	80.00%	first	no	yes
5	control	80.00%	first	no	no
7	intervention	80.00%	second	yes	no
8	intervention	80.00%	second	yes	yes
14	control	80.00%	second	yes	no

Research Question 4 Results

The fourth research question aimed to identify emerging themes from the interactive case study. Overall the themes and terminologies used revolved around recommendations and questions aimed at enhancing the safety of Sheila's home.

The control and intervention groups varied in frequency of themes, specifically the control group reported a higher number of themes. Exploration of the potential variations between the intervention and control group was conducted to discern differences in the frequency of inductive themes. While the investigator reviewed the raw data during the inductive content analysis, the language used reflected occupational therapy-specific terminology from a fundamental text titled, Occupational Therapy Practice Framework, Fourth Edition, which includes the profession's central concepts and overall information of the practice ("Occupational Therapy Practice Framework," 2020a). Particularly, two main themes emerged from the content analysis: (1) occupations and (2) interventions to support occupations. These themes emerged in the context of the case study involving the fictitious client, Sheila. The occupations' theme included four subcategories: Functional mobility, sleep, meal preparation, and safety, and the interventions to support the occupations' theme consisted of two subcategories assistive technology and environmental modifications. See Table 10 for details on the coding system used to organize and quantify the qualitative data.

The Occupational Therapy Practice Framework 4th Edition categorizes both of occupations and interventions to support occupations within "Types of Occupational Therapy Interventions" (OTPF, 2020, p.59). The category of interventions to support occupations is a new term that was previously called preparatory methods in the

Occupational Therapy Practice Framework (OTPF) 3rd edition (American Occupational Therapy Association, 2014). According to the OTPF fourth edition, occupational therapy interventions help clients engage in daily occupations to promote participation and quality of life. There are some examples provided to describe the different types of interventions, including occupations and activities, and interventions to support occupations, both of which were used as subcategories.

A subcategory of occupations and activities is “occupations”. Occupations are central to the OT profession and imperative to address when evaluating a client's home safety. For example, functional mobility (moving from one place to another) is an occupation. If not adequately addressed individuals could fall which may lead to injury and even death. Sheila from the case study had a previous fall which resulted in her hip fracture. Once individuals fall, their chances of falling again increase (Facts About Falls, 2023). Another subcategory includes assistive technology and environmental modifications. The occupational therapy practice framework fourth edition describes assistive technology and environmental modifications as, “Assessment, selection, provision, and education and training in use of high and low-tech assistive technology; application of universal design principles; and recommendations for changes to the environment or activity to support the client’s ability to engage in occupations”. Assistive technology and environmental modifications are directly related to potential recommendations and accommodations related to the home environment.

Table 12

Coding System

Generic Theme Category	Frequency
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(1) Occupations

Sleep	24
Functional mobility	65
Safety	104

(2) Interventions to

support

occupations

Environmental modifications	65
Assistive technology	69

Occupations

Several occupations were described in the open-ended responses regarding Sheila's daily activities, including functional mobility, sleep, and safety (See table 13).

Table 13

Occupations

Intervention Group		Control Group	
Participant #	Frequency of code	Participant #	Frequency of code
3	7	1	9
4	7	2	11

6	9	5	10
7	9	10	9
8	5	12	11
9	4	13	11
11	9	14	11
17	13	15	10
-	-	16	9

Functional Mobility. According to the Occupational Therapy Practice Framework, functional mobility is described as, “moving from one position or place to another” (2020). This can include ambulating, and functional transfers during daily activities (e.g., transferring from the toilet to the walker or walker to tub bench). Participants reported functional mobility 65 times. While functional mobility emerged from the open-ended responses, the term was never explicitly stated, but were directly describing functional mobility in their answers. For example, participant 16 wrote: “unsteadiness when going from sit to stand [from the toilet] little counter space and space in general for someone to help assist the tub structure, requires extensive hip, knee, and ankle flexion to get the leg into the tub, falling hazard”. The participants incorporation of the words “sit to stand” and discussing the movements needed to “get leg into the tub” are examples of functional mobility concerns. Participant 6 wrote a response related to Sheila’s bathroom, “tub height is too high for Sheila to ambulate over 2. Toilet location is too cramped for use of her walker 3. No grab bars for ease of use/avoidance of injury”. In this response, the participant is describing “cramped for use

of walker” in the bathroom at the toilet, which directly relates to Sheila’s functional mobility in the bathroom. In both examples, functional mobility is described when discussing Sheila’s ability to sit to stand from the toilet, the movement needed to perform tub transfers, the bathroom environment’s increasing difficulty to perform functional transfers due to tub height and difficulty maneuvering with the walker in the small bathroom.

Rest and Sleep. Sleep is an essential occupation that involves, “activities related to obtaining restorative rest and sleep to support healthy, active engagement in other occupations” (OTPF, 2020). Sleep was coded 24 times throughout the case study responses when responding to the prompt, “List 2-3 questions you would ask Sheila related to her bedroom”. It is important to note that in the case study, Sheila told the OT that she sleeps in her recliner and does not sleep in her bedroom. Participants mentioned sleep in the form of a question to inquire why Sheila sleeps in her recliner and not her bed. Participant 5 wrote, “did you sleep in your bed prior to your hip injury? - do you want to sleep in your room?” and Participant 1 wrote, “Why do you sleep in the recliner, and not your bed?”. Participant 3 wrote, “Is there a reason you prefer to sleep in the recliner rather than your bed?”.

Safety and Emergency Maintenance. Within the case study, questions related to safety hazards were asked for each room. Safety was described and coded 87 times. For each room in Sheila’s house, the case study asked a similar question, “List up to 3 safety hazards you observe in [insert room]”. Participant 5 wrote, “- the ledge at the tub shower is a tripping hazard - the toilet seat looks very low – no grab bars”. Safety was often described when asked “List 2-3 additional questions you would ask Sheila related

to her [insert room]”. Participant 3 wrote, “Do you have a fire extinguisher?” and Participant 7 wrote, “how hot does the water get in your bathroom”. Additionally, fall-related questions were asked. Participant 15 wrote, “Have you ever slipped or lost your footing on the [bathroom] tile?”

Interventions to Support Occupations

Interventions to support occupations, previously termed preparatory methods are defined as, “Methods and tasks that prepare the client for occupational performance are used as part of a treatment session in preparation for or concurrently with occupations and activities or provided to a client as a home-based engagement to support daily occupational performance (OTPF 4, 2020; See table 14). This category includes assistive technology and environmental modifications. The occupational therapy practice framework fourth edition describes assistive technology and environmental modifications as, “Assessment, selection, provision, and education and training in use of high and low-tech assistive technology; application of universal design principles; and recommendations for changes to the environment or activity to support the client’s ability to engage in occupations” (American Occupational Therapy Association, 2002, p. 60). The framework groups the two intervention types into one category; however, in the third edition, both types were independent. Given the nature of this study and the emphasis on assistive technology and environmental modifications, sections are coded and described independently.

Table 14

Interventions to Support Occupations

Intervention Group

Control Group

Participant #	Frequency of code	Participant #	Frequency of code
3	5	1	9
4	8	2	6
6	7	5	7
7	6	10	6
8	7	12	6
9	5	13	8
11	10	14	6
17	7	15	6
-	-	16	7

Assistive technology. Assistive technology was coded 69 times with various devices listed, questions related to the control of devices and manipulation of devices, and durable medical equipment recommendations. When asked to provide 2-3 assistive technology recommendations to improve Sheila’s independence with showering, Participant 8 wrote, “1. Grab bars within the bathroom/tub to help her get to and into the shower. 2. Transfer/tub bench to get in/out of the tub and sit while showering”, and Participant 13 wrote, “Grab bars for shower. Dressing stick. Over-toilet grab bars & raised seat”. Participant 12 further elaborated by writing, “a shower chair that extends on the side of the tub so she can slide in and does not have to step over the tub. She can install a handheld shower so she can wet the needed areas and not have to get up. She can get a longhandheld [sic] scrubber to reach areas that might be hard to

reach/put strain on her.” Regarding control of assistive technology devices, Participant 2 wrote, “...are you able to turn on the lights, TV, or place a call from the chair/sofa?” and Participant 5 wrote, “...are you able to turn on lights or the TV while sitting down.”

Environmental Modifications and Accessibility. Environmental modifications and accessibility were paired together as a theme due to their direct correlation – if there is an accessibility problem in the home, an environmental modification is one of the solutions to enhance accessibility in the home. The responses by participants are in the form of a question due to its prompt, “what would you ask Sheila...”. The environmental modification coding involved questions related to the environment to investigate whether a modification would be needed. For example, Participant 6 asked, “Other than [sic] the window, does Sheila have any other lights in this room? 2. With the dog, does Sheila ever feel cramped or like she doesn't have enough space in this room?”. Additionally, questions related to environmental modification permissions. Participant 17 wrote, “...Can you install grab bars or do any construction in here?”. Regarding accessibility, participant 7 described inaccessibility in the bathroom and wrote, “uneven flooring, no grab bars, sink fixtures look unuseable [sic], no shower curtain can make floor slippery, door swings into bathroom(limited space)”. Participant 5 also wrote, “looks like water damage or mold on the ceiling - clutter on the floors poses as a tripping hazard - seems to have very dim lighting if any at all”.

Group Comparison of Themes

The two main themes, interventions to support occupations and occupations, were quantified in each group. For interventions to support occupations, the intervention group reported a total of 50 themes, and the control group reported 61 themes. For

occupations, the intervention group reported 63 themes, and the control group reported 91 themes. Furthermore, the investigator wanted to investigate if there were specific differences between the terminologies used in the open-ended responses.

There was a notable difference in the language used by the intervention and control groups when identifying safety hazards. Participants in the intervention group had a higher tendency to incorporate clinical terminology into their responses. For instance, an intervention group participant identified a '4-step entry into front door as a potential barrier/fall risk to Sheila, who has recently recovered from a hip fracture.' Furthermore, another intervention group member noted the distance between 'bilateral railings' and discussed the implications for 'UE (upper extremity) stability and balance.' In contrast, the control group's responses were more general. For example, a participant from the control group described the primary entrance by stating, 'She has steps that can be difficult to climb, they are uncovered so they can get icy or wet, and the handrails are to the far sides providing support on only one side.' The comparison of group responses revealed that the AHP intervention may have an impact on home safety terminology.

DISCUSSION

The aging population in the United States is driving healthcare professionals, especially OTs, to address the critical need for home safety among older adults desiring to age in place. Failure to implement safety strategies can lead to home accidents resulting in injury or even death. Unfortunately, many healthcare professionals, including OTs, who should implement safety strategies lack the training and resources required to conduct comprehensive home safety assessments. OTs lack the education and tools to conduct comprehensive home safety assessments. Therefore, this study focused on introducing an AHP educational intervention to a group of 17 OT students. The primary aim was to contribute valuable insights to the OT education field and enhance OT students' knowledge of home safety, which is critical for entry-level practice.

The implementation of the inaugural home safety course resulted in a significant improvement in post-test scores, clearly demonstrating the positive impact of the educational course on students' knowledge. Additionally, the findings suggest that previous home safety experience and fieldwork experience influenced post-test scores. This aligns with the research of Tsubira and colleagues, who emphasized the importance of clinical reasoning and case-based learning as hands-on experiences for OT students (Tsubira et al., 2022). In the course, an interactive case study with a fictitious client named Sheila was employed, which has been identified in the literature as an invaluable experience for OT students (Tsubira et al., 2022). Additionally, Allen and colleagues reported that clinical reasoning should be an integral part of OT program curricula, and these findings support the use of such strategies to enhance OT students'

self-efficacy (Allen & Toth-Cohen, 2019; Jensen, 2023). These findings emphasize the significance of including hands-on learning experiences to promote clinical reasoning and highlight the need to incorporate them into the home safety curriculum.

AHP provided insights into other factors that may explain the post-test outcomes. Particularly, the control group, which used the Safe at Home Checklist assessment, achieved higher average mean scores on the perceived knowledge assessment. This suggests that the Safe at Home Checklist may have influenced their performance. It is also important to note that the Safe at Home Checklist is more concise than AHP but lacks the comprehensiveness found in the latter. Given the short duration of the course, participants in the control group may have acquired more home safety knowledge in a shorter time due to these factors. The comprehensive nature of AHP may have presented more challenges within the limited timeframe, as participants may not have had sufficient time to thoroughly review and grasp AHP concepts.

When examining the impact of covariates, the findings reveal that home safety experience and fieldwork experience likely influenced post-test scores, which is consistent with the value of hands-on experiences and multiple learning approaches (Mitchell & Woods, 2022). Similarly, fieldwork experiences appear to have impacted post-test scores, further emphasizing the importance of hands-on experiences provided in person to enhance home safety knowledge. Furthermore, a post hoc analysis identified Participant 14 as scoring in the top 35% on all assessments, suggesting that prolonged exposure to AHP may have a lasting impact on OT student home safety knowledge. The uniqueness of this participant's previous exposure reinforces the effectiveness of AHP as a valuable tool in OT education. Exposure to AHP can provide

an enriching experience to enhance student's ability to perform home safety assessments.

The qualitative themes arising from the case study suggest that differences in experiences, depending on group type, may have influenced the terminology used in the case study responses. Specifically, the intervention group included clinical terminology and in-depth answers, which could indicate that the AHP as an educational intervention may have an impact on home safety knowledge. However, it is imperative to also consider the group demographic characteristics, particularly the dominance of first-year students in the control group, which could have impacted results.

The discoveries discussed above speak to what educators should consider to enhance OT student home safety knowledge. The first is to incorporate hands-on learning experiences into the curricula to promote opportunities to acquire the skills needed to conduct thorough home safety assessments. Secondly, educators should allocate sufficient time involved in lecture-based and case-based learning experiences to ensure knowledge and skills are preserved. Finally, educators should strive to incorporate evidence-based home safety assessments into the curricula to offer an enriching experience to OT students to enhance their overall understanding and ability to conduct home safety assessments.

Limitations of the study

Several limitations should be considered in this study. First, the study's small sample size consisted solely of students from one OT program, which may not represent the breadth of OT programs in the U.S., and therefore limits the generalizability of the results. Despite the small sample size, it's essential to note that

the study yielded valuable preliminary findings that have clinical significance. This aligns with the emphasis placed by Gallo (2016) and Sharma (2021) on prioritizing clinical significance over statistical significance when clinical relevance or implications are at stake.

Regarding participant characteristics, it is important to acknowledge that participants were all from a master's level program. While the investigator does not think this would impact results, it is important to note that there is an increasing shift towards entry-level doctoral programs and that the study sample does not represent all OT educational experiences. However, it is important to note that there are minimal differences between the levels of programs. For instance, both the master's and doctoral-level students take the same licensing boards and are equally prepared for clinical practice (National Board for Certification in Occupational Therapy, 2023). Therefore the inclusion of only master students may not have affected the study results.

Furthermore, the study sample may have limited perspectives in terms of gender and ethnicity which likely could have affected study outcomes. Future research may benefit from inquiring in more detail about prior exposure to home safety concepts and training. The duration of the study, which typically took participants one to one and a half hours to complete, may have induced fatigue, potentially impacting the reliability of results. To address these limitations, future researchers need to recruit a larger and more diverse sample size considering factors such as ethnicity, gender, program year, fieldwork experience, home safety exposure, and education level (Master and Doctorate). Incorporating these strategies could mitigate the aforementioned limitations and improve the overall robustness of the study findings.

CONCLUSION

As older adults live longer with chronic conditions and express a growing desire to age in place, the pressing need for home safety and home safety-trained healthcare professionals becomes increasingly apparent and safety concerns heighten. Current approaches to address these concerns continue to fall short, primarily due to the complex and comprehensive nature of home safety assessments. Currently, there are no existing educational interventions aimed at enhancing the home safety knowledge of OT students. The study's utilization of AHP as an educational tool represents a significant first step toward addressing this gap and highlights the necessity of implementing home safety education at the OT program level to ensure preparedness for entry-level practice. The AHP intervention provided valuable clinical insights into the influence of home safety experience and fieldwork exposure on OT student knowledge. The study emphasizes the pivotal role of hands-on learning experiences and their importance in preparing OT students for entry-level practice. Additionally, the findings suggest that with further refinements, the AHP educational intervention has the potential to enhance OT student home safety knowledge.

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Appendix A: Perceived Ability Part A

On a scale from none to superior, please select your perceived ability to do the following **BEFORE** starting this module.

We recognize that you may not have previous experience in conducting or assisting with a home safety assessment. Additionally, we understand that as a student you are currently not licensed to practice. Nonetheless, we would appreciate it if you could share your thoughts on your perceived ability to hypothetically carry out these tasks **BEFORE** completing the module by answering the following questions.

Scoring:

None: Have no ability

Low: Have little ability

Average: Have basic ability (but there is more to learn)

High: Have good ability

Superior: Have excellent ability

1. **BEFORE** starting this module, how would you rate your perceived ability to **explain the role of occupational therapy and home safety?**
2. **BEFORE** starting this module, how would you rate your perceived ability to **identify home safety problems?**

3. **BEFORE** starting this module, how would you rate your perceived ability to **provide examples of how a client's impairments impact home safety?**
4. **BEFORE** starting this module, how would you rate your perceived ability to **provide examples of how a person's environment affects home safety issues?**
5. **BEFORE** starting this module, how would you rate your perceived ability to **assess relevant rooms in the client's home?**
6. **BEFORE** starting this module, how would you rate your perceived ability to **ask clients questions about their home environment?**
7. **BEFORE** starting this module, how would you rate your perceived ability to **recommend assistive technology to improve a client's home safety?**

Appendix B: Perceived Ability Part B

On a scale from none to superior, please select your perceived ability to do the following AFTER starting this module.

We recognize that you may not have previous experience in conducting or assisting with a home safety assessment. Additionally, we understand that as a student you are currently not licensed to practice. Nonetheless, we would appreciate it if you could share your thoughts on your perceived ability to hypothetically carry out these tasks AFTER completing the module by answering the following questions.

Scoring:

None: Have no ability

Low: Have little ability

Average: Have basic ability (but there is more to learn)

High: Have good ability

Superior: Have excellent ability

1. AFTER completing this module, how would you rate your perceived ability to explain the role of occupational therapy and home safety?
2. AFTER completing this module, how would you rate your perceived ability to identify home safety problems?

3. **AFTER** completing this module, how would you rate your perceived ability to **provide examples of how a client's impairments impact home safety?**
4. **AFTER** completing this module, how would you rate your perceived ability to **provide examples to how a person's environment affects home safety issues?**
5. **AFTER** completing this module, how would you rate your perceived ability to **assess relevant rooms in the client's home?**
6. **AFTER** completing this module, how would you rate your perceived ability to **ask clients questions about their home environment?**
7. **AFTER** completing this module, how would you rate your perceived ability to **recommend assistive technology to improve a client's home safety?**

Appendix C: Self-Efficacy Assessment Part A

On a scale from not confident at all to completely confident, how would you assess your level of confidence in the following questions?

Scale:

Not confident at all

Slightly confident

Somewhat confident

Fairly confident

Completely confident

1. How confident are you that you can complete the content in this home safety course?
2. If complicated ideas or topics are presented in this home safety course, how confident are you that you will be able to understand them?
3. How confident are you that you will learn the material presented in this home safety course?
4. How confident are you that you will be able to do the hardest work assigned to you in the home safety course?
5. How confident are you in your ability to remember what you learned after completing this home safety course?

Appendix D: Self-Efficacy Assessment Part B

On a scale from not confident at all to completely confident, how would you assess your level of confidence in the following questions?

1. When presented with complicated ideas or topics in this home safety course, how confident were you in your ability to understand them?
2. How confident were you in your ability to understand the material presented in this home safety course?
3. How confident were you in your ability to complete **the hardest work assigned to you** in this home safety course?
4. After completing this home safety course how confident are you that you will remember what you learned?

Appendix E: Home Safety Assessment Knowledge Part A and B

On a scale from unfamiliar to expert, how knowledgeable are you with the following home safety assessments?

Definitions:

Unfamiliar - No knowledge or experience, never heard of it

Novice - Very little knowledge and needs a considerable amount of guidance.

Advanced Beginner - Basic understanding.

Competent- Skilled with potential for improvement.

Proficient- Highly skilled, minimal guidance needed.

Expert- Advanced knowledge, has a lot of hands-on experience.

1. Rebuilding Together Safe at Home Checklist
2. AccessibleHomePRO
3. Comprehensive Assessment and Solution Process for Aging Residents (CASPAR)
4. Cougar Home Safety Assessment (CHSA).
6. Function and Environment for Rehabilitation - Health Outcomes Measurement and Evaluation (SAFER-HOME)
7. Home Environmental Assessment Protocol (HEAP)
8. HESTIA (Home Evaluation System with a Strategic Intervention Approach

9. Home Falls and Accidents Screening Tool (HOME FAST)
10. Home for Life Design
11. Home Safety Self-Assessment (HSSAT)
12. Housing Enabler
13. In-Home Occupational Performance Evaluation (I-HOPE)
14. SAFER-HOME
15. Safety Assessment of Function
16. The Cougar Home Safety Assessment
17. Westmead Home Safety Assessment (WeHSA)

Appendix F: Canvas Layout of Intervention Group

START HERE: INSTRUCTIONS

WELCOME

Welcome to the Home Safety Course!

This course is voluntary, entirely separate from your program, and has no impact on your academic standing.

START HERE - WELCOME

- Review module instructions.
- Verify non-disclosure agreement (NDA)

The Home Safety Course consists of **FIVE** sequential modules related to home safety.

Below are detailed instructions for each module in order. However, you can also find the instructions within each individual module in the "Modules" tab on the left side of the screen.

Step 1-5 details:

STEP 1: Home Safety and Self Efficacy - Part A

- Take a survey to assess your home safety assessment knowledge.
- Take a self-efficacy survey related to your confidence on certain tasks.

STEP 2: Home Safety Presentation Video

- View a presentation providing a refresher or introduction on home safety.

STEP 3: AccessibleHomePRO Tutorial

- Participate in an AccessibleHomePRO tutorial using the YouTube link provided. Explore AccessibleHomePRO web-based assessment to prepare for the upcoming case study. In the module there is a link and password and username to access the AccessibleHomePRO assessment website.

STEP 4: Case Study

- Participate in an interactive video and provide answers to questions as the case study progresses. Utilize the AccessibleHomePRO web-based assessment assist with the case study. Multiple screens or devices may be helpful during this step.

STEP 5: Home Safety and Self Efficacy - Part B

- Complete four quizzes:

- 1) Home safety assessment knowledge (Part B)
- 2) Self-efficacy (Part B)
- 3) Retrospective perceived knowledge (Part A)
- 4) Retrospective perceived knowledge (Part B)

Once you complete **STEP 5** you have officially finished the home safety course.

Thank you in advance for your participation.

Please email me if you have any questions.

Laryn O'Donnell, OTD, OTR/L

PhD Candidate, College of Health Sciences

University of Wisconsin-Milwaukee

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Select the "Next" button to continue.

Appendix G: Canvas Layout of Control Group

WELCOME

Welcome to the Home Safety Course!

This course is voluntary, entirely separate from your program, and has no impact on your academic standing.

START HERE - WELCOME

- Review module instructions.
- Verify non-disclosure agreement (NDA)

The Home Safety Course consists of **FIVE** sequential modules related to home safety.

Below are detailed instructions for each module in order. However, you can also find the instructions within each individual module in the "Modules" tab on the left side of the screen.

Step 1-5 details:

STEP 1: Home Safety and Self Efficacy - Part A

- Take a survey to assess your home safety assessment knowledge.
- Take a self-efficacy survey related to your confidence on certain tasks.

STEP 2: Home Safety Presentation Video

- View a presentation providing a refresher or introduction on home safety.

STEP 3: Safe At Home Checklist and TED Talk

- Watch the following TED Talk video: [Roger Wong: How to keep your elderly parents safe and in their home longer](#) ↗
- Take the [TED Talk Reflection Quiz](#)
- Examine two assessments using the assessment links here and within Module Step 3. Read through and familiarize yourself with both assessments to prepare for the upcoming case study. You will examine the following assessments - [Rebuilding Together Safe at Home Checklist](#) ↗ and [OT Home Health Evaluation Checklist & Quality Measures](#) ↗

STEP 4: Case Study

- Participate in an interactive video and provide answers to questions as the case study progresses. Utilize the Safe at Home checklist and OT Home Health Evaluation Checklist and Quality Measures assessment to assist you with the interactive case study. Multiple screens or devices may be helpful during this step.

STEP 5: Home Safety and Self-Efficacy - Part B

- Complete four quizzes:

- 1) Home safety assessment knowledge (Part B)
- 2) Self-efficacy (Part B)
- 3) Retrospective perceived knowledge (Part A)
- 4) Retrospective perceived knowledge (Part B)

Once you complete **STEP 5** you have officially finished the home safety course.

Thank you in advance for your participation.

Please email me if you have any questions.

Laryn O'Donnell, OTD, OTR/L

PhD Candidate, College of Health Sciences

University of Wisconsin-Milwaukee

odonnelm@uwm.edu

Appendix H: Images of Each Room in Case Study

Primary entrance



Living room



Kitchen



Bathroom



Bedroom



Appendix I: Case Study PowerPoint



Case Study

Home Safety Course



Reminder

- For the case study, you will engage in an interactive video and provide answers to questions as the case study progresses.
 - Utilize your **assessment from STEP 3** to assist with the case study.
 - The use of multiple screens or devices may be helpful during this step.
-

Disclaimer

- This is a home safety exercise. It is not comprehensive and does not include all measures, questions, or steps required for a complete evaluation and should not be substituted for professional guidance.
- No real clients were used in this presentation. Sheila is a fictional client.
- Many images were created using Canva AI Generator. All other images have citations available upon request.

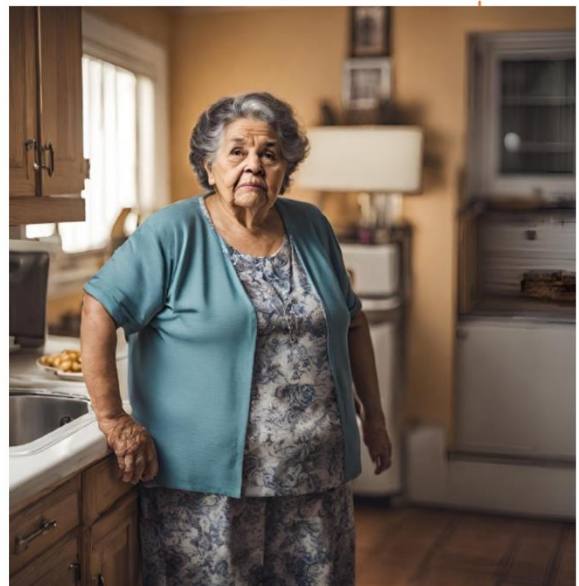


Case Study

Sheila

Meet Sheila

- Sheila is a 75-year-old female who experienced a fall after tripping over her dog, resulting in a hip fracture.
- Due to the severity of the fracture, surgical intervention was required.



Background

- Sheila was in acute care for three days following surgery.
- Sheila transitioned to a skilled nursing facility for a duration of four weeks.
- She was discharged home yesterday.



Contact Patient

- Physician referral, “Evaluate and treat”.
- You call Sheila to schedule the evaluation.



Day of Evaluation

- Arrived at Sheila's house.
- You knock on her front door and hear her say from inside, "Come in, the door is unlocked".



First Encounter with Sheila



- You find Sheila seated in a recliner chair in the family room.
- You begin the evaluation by introducing yourself and describing your role. You take her vitals, and they are all within normal parameters.





Other Relevant Information

- Bilateral upper extremities (BUE) are within normal limits.
- BUEs 3-/5 for MMT.
- You observe generalized weakness and shortness of breath as Sheila uses her walker to get around her home.
- She reports a 5/10 pain in her affected hip.

First Encounter with Sheila Continued



- You and Sheila identify that she has difficulty with showering and dressing. You also identify that she has a standard walker. However, she tells you that she doesn't really need to use it since she feels better and doesn't get out of her recliner much.
- Next, you ask Sheila if you can look around her home to assess the safety of her home environment using a **home safety assessment**. With her approval, you start looking around her home environment.

Rooms in Sheila's House



Living Room

- Sheila tells you that she watches TV and reads in the living room.
- Sheila tells you that when she doesn't use her walker around the home, she holds onto other furniture to get around.





Sheila's
Recliner
↓

Kitchen

- ◆ Sheila tells you that she does not cook and uses the Meals on Wheels service.
- ◆ She emphasizes that her mornings must start with a cup of coffee and a bowl of bran cereal, which she prepares herself.





Bathroom

- Sheila hasn't been able to shower since she got home and expresses a fear of falling.
- She informs you that she dresses in the bathroom and is having difficulty donning her pants, shoes, and socks.
- You observe Sheila holding onto the side of the sink while performing a sit-to-stand from the toilet.





Bedroom

- You observe that there are objects scattered around the floor of the bedroom.
- Sheila tells you that she only goes into her bedroom to retrieve clothing. She sleeps in her recliner in the living room.



NEXT STEPS

**Please go back to Canvas and complete
the final module,
“Step 5: Home Safety and Self Efficacy –
Part B”**



Appendix J: Qualitative Case Study Questions

1. How might the primary entrance to Sheila's home impact her ability to enter and leave her home? List three observations.
2. How would you describe your role as an occupational therapist?
3. List two questions you would ask Sheila to get a sense of her prior AND current level of function. (four answers total)
4. List three follow-up questions you would ask Sheila about showering and dressing.
5. How would you respond to Sheila's comment about how she doesn't really use it [her walker] since she feels better and doesn't really get out of her recliner?
6. What other questions would you ask Sheila related to the standard walker or alternative/additional assistive technology devices she may use?
7. How would you describe to Sheila what a home safety assessment is?
8. List 2-3 additional questions you would ask Sheila related to her living room environment.
9. List up to three safety hazards you observe in Sheila's living room.
10. List 2-3 additional questions you would ask Sheila related to her kitchen.
11. List up to three safety hazards you observe in Sheila's kitchen.
12. List 2-3 assistive technology devices you would recommend to improve Sheila's independence with showering.
13. List 2-3 assistive technology devices you would recommend to improve Sheila's independence with dressing.
14. List 2-3 additional questions you would ask Sheila related to the bathroom.
15. List up to three safety hazards you observe in Sheila's bathroom.
16. List 2-3 additional questions you would ask Sheila related to her bedroom.
17. List 2-3 safety hazards you observe in Sheila's bedroom.
18. Is there anything else you want to ask Sheila before your evaluation ends?

Appendix K: Qualtrics Survey

[consent form here before survey]

By clicking on the "I Agree" button below, you are providing your consent to participate in this research study.

- Agree
- Disagree

If disagree it go to the end of the survey saying, "Thank you for participating. Due to your responses, you are ineligible to complete the study. Please email odonnelm@uwm.edu if you would still like to enter the prize drawing."

Screening

1. Can you speak and understand English in both audible and written forms?
 - a. Yes
 - b. No

Are you a student enrolled in an accredited Masters of Occupational Therapy or entry-level Doctor of Occupational Therapy program in the United States?

2. Are you an occupational therapy student enrolled in an accredited U.S. occupational therapy program?
 - a. Yes
 - b. No

Please provide your occupational therapy school/program email address for set up instructions and access to study. Email address: _____

3. Do you have access to Canvas online learning management system through your occupational therapy program?
 - a. Yes
 - b. No

***If any of the above questions were answered no, the survey would end logic due to participant deemed ineligible stating, "Thank you for participating. Due to your responses, you are ineligible to complete the study. Please email odonnelm@uwm.edu if you would still like to enter the prize drawing."

4. Please provide your occupational therapy school/program email address for study related communications, including Canvas course set up instructions and incentive information if applicable.

School Email Address: _____

5. By clicking on the "I Agree" button below, you are providing your consent to participate in this research study.
 - a. Agree
 - b. Disagree

Statement: We are asking you to complete a few questions for a description of our sample. All data collected will be anonymous and presented in aggregate form. Data will not be connected to your responses.

Part I. Demographics

6. Select your gender:
 - a. Male
 - b. Female
 - c. Non-binary
 - d. Don't know/not sure
 - e. Other: _____
 - f. Prefer not to answer/refuse

7. Select your ethnicity:
 - a. Alaska Native
 - b. American Indian
 - c. Asian
 - d. Black or African American
 - e. Hispanic or Latino
 - f. Native Hawaiian
 - g. Pacific Islander
 - h. White
 - i. Other: _____
 - j. Prefer not to answer.
8. What MSOT or OTD program are you currently enrolled in? _____.
9. Include the state and city of your occupational therapy program.
_____.
10. List if you are a first, second, or third year occupational therapy student:
 - a. First year
 - b. Second year
 - c. Third year
11. Please select the following statement that best describes your fieldwork experience at this time:
 - a. I have not completed level I or level II field work yet.
 - b. I have completed/ I am in the process of completing my level I fieldwork.
 - c. I have completed/ I am in the process of completing my level II fieldwork.
 - d. I have completed all fieldwork requirements and will start my capstone soon/currently completing my capstone project (OTD program)
 - e. I have completed all fieldwork requirements at this time (MSOT program, no capstone project)

Part II. Home Safety Assessments

12. At this time, have you learned about home safety assessments in your current occupational therapy program?
- a. Yes
 - b. No
 - i. If no, do you have an interest in learning about home safety assessments?
13. Have you learned about home safety assessments outside of your current occupational therapy program?
- a. Yes
 - b. No
 - i. If yes, please describe where (grandparent has received a home safety assessment and I was present, aging in place experience, etc.) _____.
14. Do you have any aging in place or home safety experience?
- a. Yes
 - b. No
 - i. If yes, please describe: _____
15. Please rate your knowledge of the following assessments from: 1. Novice, 2. Advanced beginner, 3. Competent, 4. Proficient, 5. Expert.
1. Rebuilding Together Safe at Home Checklist
 2. AccessibleHomePRO
 3. Comprehensive Assessment and Solution Process for Aging Residents (CASPAR)
 4. Cougar Home Safety Assessment (CHSA).
 5. Environment for Rehabilitation–Health Outcome Measurement and Evaluation (SAFER-HOME)
 6. Home Assessment Profile
 7. Home Environmental Assessment Protocol (HEAP)
 8. HESTIA (Home Evaluation System with a Strategic Intervention Approach
 9. Home Falls and Accidents Screening Tool (HOME FAST)
 10. Home for Life Design
 11. Home Safety Self-Assessment (HSSAT)
 12. Housing Enabler
 13. In-Home Occupational Performance Evaluation (I–HOPE)
 14. SAFER-HOME
 15. Safety Assessment of Function
 16. The Cougar Home Safety Assessment
 17. Westmead Home Safety Assessment (WeHSA)

Thank you for completing the survey. You will receive a follow up email from Laryn

O'Donnell at the email odonnem@uwm.edu for further instructions. Please email

odonnelm@uwm.edu or Dr. Roger O. Smith at smithro@uwm.edu if you have any questions or concerns.

Appendix L: Recruitment Materials

Participants Needed for Home Safety Study



ATTENTION OT STUDENTS!

Do you want to learn about home safety in order to equip older adults for safe, independent living at home?

Participate in this study!

What you will do:

- Complete a 2-hour module on Canvas
- Join the study on 11/1 or 11/2 in the NWQD for **pizza and cookies!**

Benefits to participation:

- Gain home safety knowledge.
- Enhance care for future clients.



Participate for a chance to win:
One or three \$100 Amazon gift cards!
There will be 4 winners!

EMAIL ODONNELM@UWM.EDU
FOR MORE INFORMATION

Voluntary participation with no academic impact.
Participation not required for drawing entry.
Email odonnelm@uwm.edu to enter.

Recruitment Scripts

In-person script

“Hello OT students. My name is Laryn O’Donnell I am an occupational therapist and PhD candidate here at UWM. I am thrilled to invite you to an exclusive event tailored to enhance your expertise in home safety—an essential skill for your upcoming career in occupational therapy! Please save the date for [insert date, time, and location] and be part of an engaging 1.5-2 hour session crafted just for OT students. And to sweeten the deal, we’ll have delicious Crumble

cookies and pizza as you expand your home safety knowledge. Remember, this event is entirely optional, but your participation automatically qualifies you to enter an exciting prize drawing. You are still eligible to enter the drawing even if you choose not to participate. Contact odonnelm@uwm.edu to enter without participation. For the drawing, one lucky student will take home a \$200 Amazon gift card, while three others will each receive a \$100 Amazon gift card. This is an opportunity you won't want to miss! Please scan the [insert QR code/Link] on the flyer if you would like to sign up. [insert QR code or link]

Email script for UWM in-person event

Subject Line: Food and fun! Home Safety Study for your OT students

Subhead: Food and fun! Home Safety Opportunity for OT students

Body Copy:

Attention future OT experts! Join us for an exclusive event dedicated to enhancing your knowledge of home safety, a crucial skill for your future career in occupational therapy! Join us on [date, time, and location] for a fun-filled 1.5-2 hour session exclusively for OT students. Indulge in delicious Crumble cookies and savory Pizza as you expand your knowledge on home safety. Remember, this event is completely optional, and you'll automatically be in the running for fantastic prizes. Remember, this event is entirely optional, but your participation automatically qualifies you to enter an exciting prize drawing. You are still eligible for the prize drawing even if you choose not to participate. Contact odonnelm@uwm.edu to enter. For the drawing, one lucky student will take home a \$200 Amazon gift card, while three others will each receive a \$100 Amazon gift card. This is an opportunity you won't want to miss!"

Please email odonnelm@uwm.edu if you plan to attend!

If possible, please pass this information along to your other classmates.

[insert link to survey]

For questions, please email odonnelm@uwm.edu. Thank you in advance for your consideration!

Sincerely,

Laryn O'Donnell, OTD, OTR/L

Email script for online participants

Subject Line: Enhance Home safety Knowledge!

Body Copy:

Attention aspiring OT professionals! Don't miss this exclusive online event on [insert date and time] focused on honing your skills in home safety—a vital aspect of your future career in occupational therapy. Participation automatically enters you into an exciting drawing. You can enter the drawing even if you choose not to participate. Contact odonnelm@uwm.edu to enter. The online portion will enter a separate drawing than the in-person participants but will be entered in for the same amount (1 \$200, and 3 \$100 Amazon gift cards). One lucky with one lucky student will win a \$100 Amazon gift card. Please email odonnelm@uwm.edu if you plan to attend! Please fill out this survey to sign up! [insert link to survey]

For questions, please email odonnelm@uwm.edu. Thank you in advance for your consideration!

Sincerely,

Laryn O'Donnell, OTD, OTR/L

Appendix M: SPSS codebook

<i>SPSS Codebook</i>			
SPSS Name	Variable	Coding Instructions	Measurement Scale
<i>ID</i>	Identification number	# assigned to each participant	continuous
<i>Canvas</i>	Canvas Access	1 - yes, 2- no	nominal
<i>gender</i>	gender	1- male, 2- female, 3- non- binary/third gender, 4-prefer not to say , 5-dont know/not sure	nominal
<i>ethnicity</i>	ethnicity	Alaska native- 1, 2- american Indian, 3-asian, 4- black or African American, 5- Hispanic or Latino, 6-native Hawaiian, Pacific islander-7, White-8, Multiracial-9	nominal
<i>Home safety experience in ot school</i>	HSA_experience_OT	1=yes, 2=no	nominal
<i>year in ot school</i>	year	first-1, second-2, third-3	nominal
<i>Fieldwork</i>	Fieldwork	0-I have not completed level I or level II fieldwork yet., 1-I have completed/ I am in the process of completing my level I fieldwork., 2-I have completed/ I am in the process	nominal

		of completing my level II fieldwork, 3-I have completed all fieldwork requirements and will start my capstone soon/currently completing my capstone project (OTD program), 4-I have completed all fieldwork requirements at this time (MSOT program, no capstone project)	
<i>HSA_A</i>	home safety assessment pre	score	continuous
<i>HSA_B</i>	home safety assessment post	score	continuous
<i>SE_A</i>	self-efficacy pre	score	continuous
<i>SE_B</i>	self-efficacy post	score	continuous
<i>Perceived_A</i>	perceived pre	score	continuous
<i>Perceived_B</i>	perceived post	score	continuous

Appendix N: Original Code System

Code System	Memo	Frequency
Code System		384
Bedroom - Question 16 and 17		0
ADLs		0
Sleep		14
Functional mobility		13
Environment		17
Accessibility		9
Kitchen - Question 10 and 11		0
Accessibility		16
appliances		7
Safety		0
condition of space		21
fire safety		3
ADLs		0
functional mobility		7
meal preparation		9

Living Room - Question 8 and 9	0
ADLs	1
functional mobility	13
sleep	3
Environment	9
Safety	4
hazardous objects	1
Clutter	17
Tight spaces	8
Functional Mobility	11
assistive technology	6
control of devices	8
Primary Entrance - Question 1	0
Accessibility	0
locks to open door	4
Stairs/steps	16
front door width	2

Safety	0
debris/weather condition in front of steps	2
handrails	12
post hip sx precautions	7
Lighting	3
doormat-tripping	10
Assistive technology for showering - Question 12	
Assistive devices and technology	0
Assistive technology devices	0
long handles sponge	3
raised toilet seat	2
shower chair	16
dressing stick	2
grab bars	15
handheld shower head	4
non-slip mat	4
sock aid	2
Reacher	1

AT/DME Difficulties	16
Bathroom - Question 14 and 15	0
Functional mobility	15
sit to stand	4
Reaching	5
Balance	4
Environment	7
Permission to install home mods	4
Safety	16

Appendix O: MAXQDA Coded Document

Code System

Code System	Memo	Frequency
Code System		384
Occupations		0
		0
Sleep		24
Functional mobility		65
Meal preparation		9
Safety		104
Environment modifications – with accessibility included		65
Assistive technology		69
Accessibility		9
		0
Accessibility		16
appliances		7
Safety		0
condition of space		21

fire safety		3
ADLs		0
functional mobility		7
meal preparation		9
		0
ADLs		1
functional mobility		13
sleep		3
Environment		9
Safety		4
hazardous objects		1
Clutter		17
Tight spaces		8
Functional Mobility		11
assistive technology		6
control of devices		8
		0
Accessibility		0
locks to open door		4
Stairs/steps		16

front door width		2
Safety		0
debris/weather condition in front of steps		2
handrails		12
post hip sx precautions		7
Lighting		3
doormat-tripping		10
Question 12		0
Assistive devices and technology		0
Assistive technology devices		0
long handles sponge		3
raised toilet seat		2
shower chair		16
dressing stick		2
grab bars		15
<u>hand held</u> shower head		4
non-slip mat		4
sock aid		2
Reacher		1
AT/DME Difficulties		16

Bathroom - Question 14 and 15		0
Functional mobility		15
sit to stand		4
Reaching		5
Balance		4
Environment		7
Permission to install home mods		4
Safety		16

Appendix P: MAXQDA Codes

	1	Qualitative Data – Case study
	2	Interactive Case study for Home Safety Course
Question {	3	How might the primary entrance to Sheila's home impact her ability to enter and leave her home? List three observations.
..doormat-trippii ..front door widt ..Stairs/steps	4 5	Participant 1 - CON 1. She has 3/4 steps to get to the door. 2. There is a small doormat outside the door. 3. The door is not wide.
..locks to open d ..handrails ..Stairs/steps	6 7	Participant 5- CON 1. There are 4 steps leading up to her door. 2. There are many locks she will have to unlock/lock when entering or exiting her home. 3. There is no railing at the last step leading up to the door.
..post hip sx f ..Stairs/steps ..handrails	8 9	Participant 2 - CON There are stairs to enter which may be hard to do after surgery or as she ages There are handrails on either side of the stairs which would be helpful there is only one small light next to the door which may make it hard to see at night
..Lighting ..doormat-trippii ..handrails ..Stairs/steps	10 11	Participant 8 - INT 1. 4-steps to get into the front door 2. stair railing does not appear to start at the first step 3. Entry rug can be unsafe as she could trip over it/get caught on it
..post hip sx pre ..Stairs/steps ..front door widt	12 13	Participant 9 - INT I observe that she has 4 steps to enter (including the door step) which may be an issue due to her hip surgery and precautions. The rails look thin and unstable which present a fall risk is she uses them to step up into her house. The door has a lot of locks which may present a risk if there is an emergency. The door way is relatively narrow. There is a mat which is a fall risk.
..handrails ..locks to open d ..Stairs/steps	14 15	Participant 4 - INT Multiple stairs, could only use one handrail due to them being far apart, appears to be multiple locks on door which could make it difficult to open door
..debris/weather co ..Stairs/steps	16 17	Participant 6- INT It contains three large steps to enter. It contains a smaller step at the doorway. There are leaves and debris surrounding the entrance to her home.
..doormat-tripping ..Stairs/steps	18 19	Participant 7-INT She has 4 steps to enter her home and one is elevated before opening her door. There is also a mat on the ground of the third step.
..doormat-trippii ..handrails ..Stairs/steps	20 21	Participant 3 - INT There are three steps needed to get onto the porch, plus an additional step to get into the home. There is no handrail for the final step into the home. There is a welcome mat that could be a hazard if she were to trip over it.
..handrails ..doormat-trippii ..post hip sx pre	22 23	Participant 10- CON the handrails do not go all the way to the bottom of the stairs. the rug is a tripping hazard, there is not a grab bar for the last additional step into the home. may not be able to go up and down the starts successfully.
..debris/weather ..handrails	24 25	Participant 13-CON She has steps that can be difficult to climb, they are uncovered steps so they can get icy or wet, and the hand rails are to the far sides so she only has support on one side

<p>..debris/weather</p> <p>..handrails</p> <p>..post hip sx f</p> <p>..Stairs/steps</p> <p>..post hip sx f</p> <p>..locks to open door</p> <p>..doormat-t</p> <p>..doormat-t</p> <p>..Stairs/ste</p> <p>..post hip s</p> <p>..handrails</p> <p>..locks to open d</p> <p>..Stairs/steps</p> <p>..handrails</p> <p>..doormat-trippi</p> <p>..doormat-trippi</p> <p>..Stairs/steps</p> <p>..Lighting</p> <p>..Stairs/steps</p> <p>..handrails</p> <p>..doormat-tripping</p> <p>..Stairs/steps</p> <p>..post hip sx pre</p> <p>..handrails</p> <p>..handrails</p> <p>..Lighting</p> <p>..Stairs/steps</p> <p>Question</p> <p>..Functional M</p> <p>..Safety</p> <p>..functional</p> <p>..sleep</p> <p>..Functiona</p> <p>..sleep</p> <p>..functional m</p> <p>..assistive tec</p> <p>..control of de</p> <p>..Functional M</p> <p>..assistive tec</p> <p>..control of de</p> <p>..functional m</p> <p>..Functional M</p> <p>..functional mobility</p> <p>..assistive technology</p> <p>..control of devices</p>	<p>26 Participant 14- CON</p> <p>27 There are three steps that may make it very difficult or impossible to enter her home. There are many locks on the door at different heights, she may not be able to reach them all and may have difficulty unlocking every one. There is a door mat which could be a tripping hazard for Sheila.</p> <p>28 Participant 12- CON</p> <p>29 The floormat may be a slipping hazard if it is not secure. The steps may not be good for her/ difficult to walk up after the surgery. The handrails do not start on ground level and they may be hard to reach and use. There are a lot of locks and knobs and this may be confusing.</p> <p>30 Participant 15- CON</p> <p>31 Uneven steps, railings that are not long enough for comfortable grabbing while scaling and descending the entirety of the steps. Floating step at base of front door causes a tripping hazard.</p> <p>32 Participant 16- CON</p> <p>33 There are 3 steps, another step to get into her house It looks like there is improper lighting There is a rug outside her door</p> <p>34 Participant 11- INT</p> <p>35 The entrance has three main steps, then one more step to get in the door. This could make it difficult for Sheila to enter. There is a guide rail to the entrance Sheila could use for support. There is a rug in front of the entrance Sheila could trip on.</p> <p>36 Participant 17- INT</p> <p>37 1. 4-step entry into front door may be a barrier/fall risk to Sheila as she has just recovered from a hip fx. 2. Bilateral railings are far apart from one another so Sheila may not be able to rely on her UE for stability and balance when entering and leaving the home. 3. Utilizing a walker would be difficult on the 3 consecutive stair portion of the entry.</p> <p>38 Participant 18-CON</p> <p>39 -there are three steps to enter the home -the railings appear unstable -It is not well lit</p> <p>40 List 2-3 additional questions you would ask Sheila related to her living room environment.</p> <p>41 Participant 1 - CON</p> <p>42 1. Is it difficult to reach your windows? 2. Do you ever bump into the little table with your walker? 3. Is it difficult to sit down and get up from your couch?</p> <p>43 Participant 5- CON</p> <p>44 - do you sleep in the living room? - are your chairs/couch really soft/squishy? are they hard to sit in and stand up from? - are you able to turn on lights or the TV while sitting down?</p> <p>45 Participant 2 - CON</p> <p>46 are the chairs and sofas hard cushions or sofa? do you have any trouble standing up from your chair or sofa? are you able to turn on the lights, TV, or place a call from the chair/sofa?</p> <p>47 Participant 8 - INT</p> <p>48 1. How easy is it for you to move around the living room with your walker to either use the buttons on your TV, open/close your blinds, or grab something from a cabinet? 2. How easy is it for you to get in and out of your recliner? 3. How often do you spend time in the living room and for how long?</p> <p>49 Participant 9 - INT</p> <p>50 How much time do you spend in the living room? What area or chair do you tend to sit in the most when you watch TV or read?</p>
---	---

..functional mobility	51	Participant 4 - INT
	52	Do you feel there are things that get in the way when you walk? Is your chair comfortable for you?
..Environment	53	Participant 6- INT
	54	1. Other than the window, does Sheila have any other lights in this room? 2. With the dog, does Sheila ever feel cramped or like she doesn't have enough space in this room? 3. Sheila says that she frequently sits in her recliner so do other people ever come over and utilize the other furniture in this room?
..ADLs	55	Participant 7-INT
..sleep	56	What furniture do you typically use or sit on? Is this the recliner that you are typically in, and do you tend to fall asleep on this recliner?
..control of devik	57	Participant 3 - INT
..Environment	58	Where do you usually sit to do these activities? Is the lighting in the room bright enough for you to see well when reading? Do you have a remote for your TV?
..assistive techn	59	Participant 10- CON
..functional mob	60	Is there anything else you would like to do in the living room but can not due to set up? Is there anything in the room that has caused her to be unsafe? can she get in and out of the chairs/ couches easily? How easily can she turn on tv, lights, answer phone?
..assistive techn		
..control of devices		
..Functional Mobilit	61	Participant 13- CON
..functional mobilit	62	Do you have a pathway you usually use? What furniture do you use for support? Is it hard to move the walker on your carpet?
..Functional M	63	Participant 14- CON
..assistive tec	64	Do all the chairs have arm rests? Are you able to turn on light, radio, TV, place a phone call from bed, chair, and sofa? Do you find it difficult to sit down or get up from your chairs?
..control of devices		
..functional mobility	65	Participant 12- CON
..Environment	66	where do you sit most often and why? Do you feel there is adequate lighting in this room to get around and do your activities in here? Is there certain areas of the living room you avoid or do not utilize and why?
..Safety	67	Participant 15- CON
..functional m	68	Do you have a difficult time getting on and off the couch? Have you tripped over any items in this room (specifically the footstool), Are you able to turn the TV on and off without getting up?
..control of devices		
..Functional Mob	69	Participant 16- CON
..Functional Mob	70	Are you able to move around your living room? Do you ever feel like your living room is unsafe? Are you able to access your Tv remote and lights from your chair?
..functional mob		
..control of devices		
..Functional Mobilit	71	Participant 11- INT
..functional mobilit	72	1) How do you transfer from one area to the next in the living room? 2) Do you find it difficult to walk around in your living room?
..functional mob	73	Participant 17- INT
..Environment	74	What chair do you usually sit in? Is it easy for you to get in and out of it? Do you have trouble moving your walker around in here? What could we do to make that safer? When it gets dark outside, do you have lamps or lights to turn on in this room?
..Functional Mobility		
..Environment	75	Participant 18
..functional mob	76	1. Do you have difficulty standing up and sitting down on the sofa in your living room? 2. Does your walker get caught on the carpet in here? 3. Do you or have you tripped

- ..Environment
- ..functional mob
- ..Functional Mobility
- Question
- ..Safety
- ..Tight spaces
- ..Clutter (+)
- ..Clutter (+)
- ..Clutter (+)
- ..Environment
- ..Tight spaces
- ..Clutter (+)
- ..Tight spaces
- ..Clutter (+)
- ..Environment
- ..Clutter (+)
- ..Clutter (+)
- ..Tight spaces
- ..Clutter (+)
- ..Tight spaces
- ..Clutter (+)
- ..Tight spaces
- ..Tight spaces
- ..Safety
- ..hazardous objects

on any of the furniture in here? 4. Able to turn on light, radio, TV, place a phone call from bed, chair, and sofa?

77 05:29
78 List up to three safety hazards you observe in Sheila's living room.

79 Participant 1 - CON
80 1. She may bump into the little table with her walker. 2. She may have to reach over the furniture to access the windows (possibly leaving the walker to the side?) 3. Is there enough room in between the recliner and little table to put her walker?

81 Participant 5- CON
82 - footstool is in the way of the recliner - table is in the way of the recliner

83 Participant 2 - CON
84 leg rest in the middle of the walk way Lots of stuff on the tables that could be knocked over if she is using them as support when walking

85 Participant 8 - INT
86 1. Tight spaces to maneuver through to get to her recliner (i.e. between clutter of the small space, other furniture, and coffee table. 2. The lighting in this room is dim. 3. The furniture appears to be close to the ground.

87 Participant 9 - INT
88 The table The ottoman (with the remote on it) Narrow walkways

89 Participant 4 - INT
90 Clutter/lots of furniture

91 Participant 6- INT
92 1. There is not enough space for Sheila and her walker to safely navigate through the area. 2. There seems to be inadequate lighting for functional activities in the space. 3. Things are quite out of reach for Sheila while she is sitting in her recliner. 4. The recliner is older and does not provide a lot of support. Sheila may have issues getting in and out of this chair.

93 Participant 7-INT
94 Sheila's arm rests are not permanent, all of her furniture is spread out making it hard for her to reach items. her remotes is on a different chair. Her room has many breakable trinkets and tripping hazards. Not a lot of room to navigate.

95 Participant 3 - INT
96 It appears there are tight spaces that she has to walk through to access the living room. If she utilizes furniture to hold onto while ambulating, there is a lot of clutter on the tables, and they are also low to the ground if she were to try to walk to the TV and use the tables for support.

97 Participant 10- CON
98 the table, rug, over full, tripping hazards, due to too much in the room she is not able to have the walker near her. Couches recliner may be difficult to get in and out of.

99 Participant 13- CON
100 It's cluttered/narrow pathways That small table is not sturdy enough to support a person and it's at knee height (tripping level)

101 Participant 14- CON
102 -The small table with sharp corners - the carpeted floor which can make it difficult to use her walker on - There is not a lot of open space for Sheila to move without a trip hazard or risk of knocking over some of the clutter.

..Clutter (+)	103 104	Participant 12- CON the recliner looks soft and like it would sink in a lot and be hard to get in and out of. There are a lot of obstacles to walk around and that she could potentially trip over like the ottoman. The tv location is positioned in a way that hard to see and turn on.
..Clutter (+) ..Environment	105 106	Participant 15- CON Small furniture are tripping hazards and could cause future falls. Sheila's recliner is not elevated, causing issues with getting up/down. Limited amount of light.
..Clutter (+)	107 108	Participant 16- CON carpet small table can be a hazard, unstable the foot rest of the chair (with the tv remote on it) seems like an unstable surface and just another thing in the way
..Tight spaces ..Clutter (+)	109 110	Participant 11- INT 1) There isn't much room for a walker (hence Sheila is using furniture for mobility) 2) There are hazards on the floor Sheila could run into or trip on (coffee table, hassock) 3) The Recliner is lower to the ground so it could be hard for Sheila to sit in/get up out of.
..Environment ..Clutter (+)	111 112	Participant 17- INT 1. Clutter (obstructed walkways) 2. No lamps or lights visible 3. Candles on the floor
..Clutter (+)	113 114	Participant 18- CON 1. If she is using the furniture to stabilize herself a lot of the furniture is very low so she is probably bending over very far. 2. The benches and table in the middle of the living room are big tripping hazards. 3. There is no stand in arms length from the sofa for her to put her phone or tv remote on.
Question	115 116	05:39 List 2-3 additional questions you would ask Sheila related to her kitchen.
Accessibility ..functional mobility	117 118	Participant 1 - CON 1. How often do you use the tall cabinets? 2. If often, what do you have in the tall cabinets? 3. Does your walker get caught on the flooring tiles?
..meal preparation	119 120	Participant 5- CON - what do you use your kitchen for? - do you prefer to use meals on wheels? - did you ever cook for yourself?
..meal preparation ..appliances	121 122	Participant 2 - CON How often do you get your meals delivered? What appliances do you use the most when preparing/heating up those meals?
Accessibility	123	1. How often do you spend time in the kitchen for other things besides cooking meals? 2. Do you ever find it difficult to reach certain objects off of the shelving in your kitchen?
..meal preparation	124 125	Participant 9 - INT I would ask where her utensils are stored I would ask where specifically she prepares her meals
..appliances ..condition of space	126 127	Participant 4 - INT Do you ever use the microwave? Is this floor slippery for you to walk on
..appliances ..meal preparation	128 129	Participant 6- INT 1. How often does Sheila cook or utilize the kitchen? 2. Do the appliances in the kitchen work? 3. Does Sheila ever have anyone come over and help her in the kitchen?

<p>..appliances [] [] ..meal preparation [] []</p>	<p>130 Participant 7-INT 131 What devices do you need to make your meal on wheels food? A microwave.. stove.. do they come premade? Would you like to cook? What items do you use the most in your kitchen?</p>
<p>..fire safety [] [] Accessibility [] []</p>	<p>132 Participant 3 - INT 133 Do you have a fire extinguisher? Are you able to reach and grab food/dishes from the upper cabinets? Are you able to bend to reach items in the lower cabinets?</p>
	<p>134 Participant 10- CON 135 What does she use the kitchen for (coffee, tea, snacks, dessert) If the kitchen was assessible would she cook, does she have a desire to cook? what works for you in the kitchen and what does not?</p>
<p>..meal preparatic [] [] [] ..condition of sp [] [] [] Accessibility [] [] [] ..functional mob [] [] [] Accessibility [] [] [] ..condition of space [] [] []</p>	<p>136 Participant 13-CON 137 Where do you pour your bowl of cereal and milk? Do you buy gallons or half gallons of milk? How do you make your coffee?</p>
<p>..functional mobilit: [] [] ..condition of spac: [] []</p>	<p>138 Participant 14- CON 139 Do you find that the light levels make it easy for you to see? Do you have difficulty reaching your top row of storage? Do you find you have enough space to maneuver with your walker?</p>
<p>..condition of spac: [] [] ..meal preparation [] []</p>	<p>140 Participant 12- CON 141 Why do you not cook in here anymore? does the tile impact anyway you use the kitchen? Is it hard to bend and use the pantry space or appliances?</p>
<p>Accessibility [] [] [] ..meal preparatic [] [] [] ..condition of space [] [] []</p>	<p>142 Participant 15- CON 143 Do you do any food preparation that does not require cooking? Do you wash any utensils by hand? How often do you have dishes and utensils out on the counter, and for how long?</p>
<p>..functional mobility [] [] []</p>	<p>144 Participant 16- CON 145 Do you prepare any snacks in your kitchen or cold foods? Do you feel like you can reach everything in your cupboards? Is anything in the kitchen too heavy?</p>
<p>..meal preparatic [] [] [] Accessibility [] [] [] ..functional mobility [] [] []</p>	<p>146 Participant 11- INT 147 1) What do you currently use your kitchen for? (make snacks, reheat food, ect) 2) How often do you use your kitchen? 3) How do you ambulate or walk around in your kitchen?</p>
<p>Accessibility [] [] []</p>	<p>148 Participant 17- INT 149 1. Can you show me how you make your coffee (i.e. does she use the stove top)? 2. Do you use your walker in the kitchen? Do you get tired from standing? 3. Can you reach everything in your kitchen?</p>
<p>Question [] [] [] ..appliances [] [] [] Accessibility [] [] []</p>	<p>150 Participant 18-CON 151 1. Is she able to reach into the cabinets when she needs a cup, plate, etc? 2. Would she like to use the kitchen if it was easier to use?</p>
<p>..condition of spac: [] [] [] ..functional mobilit: [] [] []</p>	<p>152 06:14 153 List up to three safety hazards you observe in Sheila's kitchen. 154 Participant 1 - CON 155 1. edges of the counter could be sharp 2. tall cabinets, may be hard to reach 3. is her fridge close to the microwave?</p>
	<p>156 Participant 5- CON 157 - health hazards because of dirty dishes lying around (bugs or mold) - she has to move a lot from stove side to dishwasher side (they aren't close together)</p>

..condition of space	{	158	Participant 2 - CON
		159	counter space is full of other things stove covers missing dim lighting
..condition of space	{	160	Participant 8 - INT
		161	1. Cluttered counters 2. High shelving in which objects could fall off of and onto her
		162	Participant 9 - INT
		163	The loose materials on the counter The ledges/knobs might be a fall risk (if she grabs them to walk or catch herself)
..condition of space	{	164	Participant 4 - INT
		165	Clutter old food on counter
..condition of sp	{	166	Participant 6- INT
Accessibility	{	167	1. Poor condition of the floor tiles 2. Poor condition of the cabinets and drawers 3. Cabinets and drawers have inadequate handles for use 4. Appliances look out of order
..appliances	{		5. Clutter in the kitchen poses a clear hazard
..condition of space	{	168	Participant 7-INT
		169	The space is cluttered, and the knobs to cabinets are tiny or look like they do not work. The kitchen does not overall look safe due to the amount of items on the counter and appliances.
..condition of space	{	170	Participant 3 - INT
Accessibility	{	171	There is a lot of clutter on the countertops that can get in the way. The knobs to the cabinets are in poor condition and may be difficult to utilize. She has a gas stove, and even though she doesn't cook, if she utilizes furniture to hold onto while walking, she could accidentally turn a burner on.
..condition of space	{	172	Participant 10- CON
		173	too much stuff doesn't look organized the stove looks like a hazard things look broken there is no counter space due to the area being small may be more difficult to move around.
Accessibility	{	174	Participant 13
..functional mobility	{	175	The countertops seem to be separating from the counter so they are not a stable support. There is not good lighting.
..condition of space	{	176	Participant 14- CON
Accessibility	{	177	The cluttered counters The dull lighting The high cabinets
..condition of space	{	178	Participant 12- CON
..appliances	{	179	There is no under counter knee space and this could put strain on the body or back when trying to use the kitchen. There is not a lot of open counter space to prep, the clutter may be too much to handle and negatively impact motivation to cook. The stove looks hard to use/confusing and it may be in bad shape.
..condition of space	{	180	Participant 15- CON
		181	Uneven and chipping counters, clutter/old dishes on the countertop, cabinets falling apart
Accessibility	{	182	Participant 16- CON
..condition of space	{	183	low light tall cupboards dirty, all the surfaces are not cleaned up and there is no counter space available
..condition of space	{	184	Participant 11- INT
		185	1) Utensils (possibly knives) left on the edge of counters 2) Clutter on countertops could lead to things falling 3) Objects resting on stove burners 4) Floor tiles were

..condition of space	broken
..condition of sp	186 Participant 17- INT
..fire safety	187 1. Clutter on the counter tops. 2. No visible fire extinguisher or fire alarm. 3. High and low cabinets that may be out of reach.
Accessibility	
..fire safety	188 Participant 18-CON
Accessibility	189 1. The cabinets seem high up and do not have good handles on them. 2. The drapes hang very low and could catch fire if someone hot was placed by them. 3. The stove appears to be missing burners. 4. There is a lack of contrast in the color.
..condition of space	
Question	190 06:33
	191 List 2-3 assistive technology devices you would recommend to improve Sheila's independence with showering.
..shower chair	192 Participant 1 - CON
..grab bars	193 1. Shower chair 2. Grab bars 3. Non slip mats on inside and outside of tub
..non-slip mat	
..shower chair	194 Participant 5- CON
..grab bars	195 - grab bars - shower chair
..grab bars	196 Participant 2 - CON
..shower chair	197 grab bars in and around the shower shower chair non-slip mat for shower floor
..non-slip mat	
..shower chair	198 Participant 8 - INT
..grab bars	199 1. Grab bars within the bathroom/tub to help her get to and into the shower. 2. Transfer/tub bench to get in/out of the tub and sit while showering.
..shower chair	200 Participant 9 - INT
..raised toilet seat	201 Grab bars Shower seat/chair raised toilet seat (attachments)
..sock aid	202 Participant 4 - INT
..shower chair	203 Grab bar near toilet, shower seat, assistive device for putting on socks
..grab bars	
..long handles s	204 Participant 6- INT
..shower chair	205 1. grab bars 2. shower seat 3. long-handled sponge/brush
..grab bars	
..shower chair	206 Participant 7-INT
..grab bars	207 Grab bars for safety, shower chair for the tub so she can easily engage in bathing and reduce fatigue.
..shower chair	208 Participant 3 - INT
..grab bars	209 Grab bars to assist in getting in and out of the tub. A shower chair so that she doesn't have to stand for a long period of time and risk slipping.
..hand held show	210 Participant 10- CON
..grab bars	211 a shower slider chair, grab bars, hand held shower head
..shower chair	
..grab bars	212 Participant 13- CON
..dressing stick	213 Grab bars for shower. Dressing stick. Over-toilet grab bars & raised seat
..raised toilet se	
..grab bars	214 Participant 14- CON
..shower chair	215 Grab Bars Shower chair Handheld shower head
..hand held shower head	
..shower chair	216 Participant 12- CON

<pre> ..shower chair | | ..long handles s| | ..hand held shower head </pre>	<p>217 a shower chair that extends on the side of the tub so she can slide in and does not have to step over the tub. She can install a handheld shower so she can wet the needed areas and not have to get up. She can get a longhandheld scrubber to reach areas that might be hard to reach/put strain on her.</p>
<pre> ..grab bars [] ..non-slip mat </pre>	<p>218 Participant 15- CON 219 Grab bars, non-slip rugs, stabilizers on either side of toilet</p>
<pre> ..shower chair [] ..grab bars [] ..shower ct [] ..long hand [] ..dressing s [] ..sock aid [] ..Reacher [] ..shower chair [] ..grab bars [] ..non-slip mat [] ..grab bars [] ..shower chair [] ..hand held shower he [] </pre>	<p>220 Participant 16- CON 221 shower chair, or the half in half out shower chairs grab bars</p> <p>222 Participant 11- INT 223 1) Shower Chair 2) Long handled shower sponges 3) Dressing sticks/grabbers/sock aids for after</p> <p>224 Participant 17- INT 225 1. Tub transfer bench 2. Grab bars 3. A secured/grippy bath matt on the floor</p> <p>226 Participant 18- CON 227 1. Grab bar 2. Shower bench or chair 3. A removable shower head.</p>
<p>Question</p>	<p>228 06:58 229 List 2-3 additional questions you would ask Sheila related to the bathroom.</p>
<pre> ..Environment [] ..sit to stand [] ..Functional mobility [] Safety [] ..Environment [] </pre>	<p>230 Participant 1 - CON 231 1. Do you find it difficult to sit and stand up from the toilet? 2. Are there rugs in the bathroom? (can't see in picture)</p>
<pre> ..Reaching [] ..sit to stand [] ..Functional mob [] ..Environment [] ..Balance [] ..Functional mob [] ..Reaching [] Permission to insta [] Safety [] </pre>	<p>232 Participant 5- CON 233 - would you consider non-slip mats on the bathroom floor and in the shower? - is the lighting sufficient for you? - is the toilet the right height?</p> <p>234 Participant 2 - CON 235 do you have trouble sitting and standing with your toilet height? are you able to reach the toilet paper when sitting on the toilet? do you use a bath mat?</p>
<pre> ..Functional mobility [] </pre>	<p>236 Participant 8 - INT 237 1. Is it difficult to get on/off of the toilet? 2. Is it difficult to reach into your medicine cabinet to grab things while balancing yourself at the sink? 3. How steady do you feel when you are going to the bathroom?</p>
<pre> ..Functional mobility [] </pre>	<p>238 Participant 9 - INT 239 I would ask if she is has permission to install any assistive tools like grab bars I would ask if she has had any falls in the bathroom</p>
<pre> ..Functional mobility [] </pre>	<p>240 Participant 4 - INT 241 How to you get into/out of shower How do you get off the toilet typically</p>
<pre> Safety [] ..AT/DME Difficultie [] </pre>	<p>242 Participant 6- INT 243 1. Does Sheila ever try to use her walker in the bathroom? 2. If Sheila doesn't use this bathroom, what does she do? 3. When was the last time that the bathroom would have been updated?</p>
<pre> Safety [] </pre>	<p>244 Participant 7-INT 245 How well are you able to get in and out of your shower, before the surgery? How hot does the water get in your bathroom? Are you able to wash your hands in the sink and brush your teeth?</p>

Safety	246	Participant 3 - INT
	247	Do you ever catch yourself slipping on the tile? Do you have difficulty reaching to turn the shower knob?
..Reaching	248	Participant 10- CON
..Functional mobility	249	how difficult is it to get off and on the toilet? is she able to reach the toilet paper/ flush
Permission to install h	250	Participant 13-CON
	251	Are you able to install grab bars? How do you currently clean yourself?
..sit to stand	252	Participant 14- CON
..AT/DME Difficultie	253	-Do you experience additional pain by using the sink to help you sit to stand? -Have you tried using your walker to help you sit and stand from the toilet?
..Environment	254	Participant 12- CON
..Balance	255	is it hard to sit and stand up from the toilet because it is so low? DO you feel like you loose your balance without holding on?
..sit to stand	256	Participant 15- CON
..Reaching	257	Have you experienced difficulty sitting down/standing up off of the toilet? Do you have difficulty reaching the toilet paper? Have you ever slipped or lost your footing on the tile?
Safety		
..Functional mob		
Safety	258	Participant 16- CON
..Balance	259	Do you feel unsteady when sitting on the toilet? Are you able to manage your sink faucets and shower/ sink water temperature?
..Reaching	260	Participant 11- INT
Permission to in:	261	1) Would it be possible to install grab bars? 2) Do you ever bring your walker into the bathroom? 3) How do you get dressed in the bathroom?
..AT/DME Difficu		
..Environment	262	Participant 17- INT
Permission to in:	263	1. Would it make it easier for you if the height of the toilet was taller? 2. Can you install grab bars or do any construction in here?
..AT/DME Difficultie		
..Environment	264	Participant 18-CON
..AT/DME Difficultie	265	1. Would she benefit from a raised toilet seat? 2. Would she benefit from grab bars on both sides of the toilet?
Question	266	07:13
	267	List up to three safety hazards you observe in Sheila's bathroom.
Safety	268	Participant 1 - CON
..AT/DME Difficu	269	1. little space in bathroom to fit her walker 2. low toilet 3. tub/shower combo, she needs to step over the side to get in
..Functional mobility		
Safety	270	Participant 5- CON
..AT/DME Difficultie	271	- the ledge at the tub shower is a tripping hazard - the toilet seat looks very low - no grab bars
..AT/DME Difficulties	272	Participant 2 - CON
	273	step-in shower no grab bars sink and tub faucets possibly hard to manage
Safety	274	Participant 8 - INT
..AT/DME Difficultie	275	1. Step-in-tub 2. No grab bars

..AT/DME Difficulties	[	276	Participant 9 - INT
	]	277	No grab bars Low toilet seat
..AT/DME Difficulties	[	278	Participant 4 - INT
	]	279	no rug or grab bars, no shower seat
..Functional mobility	[	280	Participant 6- INT
..AT/DME Difficultie	]	281	1. tub height is too high for Sheila to ambulate over 2. Toilet location is too cramped for use of her walker 3. No grab bars for ease of use/avoidance of injury
..Environment	[	282	Participant 7-INT
Safety	]	283	uneven flooring, no grab bars, sink fixtures look unuseable, no shower curtain can make floor slippery, door swings into bathroom(limited space)
..AT/DME Difficultie	[	284	Participant 3 - INT
Safety	]	285	No grab bars in the tub. The floor could become slippery when exiting the tub.
..Functional mobility	[	286	Participant 10- CON
Safety	]	287	the tub shower- stepping in and out no shower curtain- wet floors short toilet limited space fall risk
..Functional mobility	[	288	Not a lot of support by toilet Large step to get into tub Tiles can be slippery when wet
Safety]		
..AT/DME Difficultie	[	289	Participant 14- CON
..Functional mobility	]	290	The shower lip/she would have to step over the low toilet No showerhead so she would have to take a bath
..Functional mobility	[	291	Participant 12- CON
	]	292	the tub is hard to get in and out of. The mirror height is not appropriate if she needed to sit and get ready. There is no overhead light above the shower and it could be hard to see when a shower curtain is on the rails.
Safety	[	293	Participant 15- CON
	]	294	No shower curtain - causes water to splash freely on tile floor and cause a fall. No rugs, increased fall risk on sleek floor.
..Balance	[	295	Participant 16- CON
..Functional mobility	]	296	unsteadiness when going from sit to stand little counter space and space in general for someone to help assist the tub structure, requires extensive hip, knee, and ankle flexion to get the leg into the tub, falling hazard
..AT/DME Difficultie	[	297	Participant 11- INT
..Functional mobility	]	298	1) A tub shower 2) No grab bars 3) low toilet that can make transfers more difficult
Safety	[	299	Participant 17- INT
..Functional mobility	]	300	1. Slippery and dirty surface/floor 2. Low-height toilet 3. The space for walking, turning, transfers and reaching is limited (cramped)
..AT/DME Difficulties	[	301	Participant 18-CON
	]	302	1. No Grab bars 2. Where is the shower head? 3. No well lit 4. Step in Tub
Question	[	303	07:35
	]	304	List 2-3 additional questions you would ask Sheila related to her bedroom.
..Functional mobility	[	305	Participant 1 - CON
Sleep	]	306	1. Why do you sleep in the recliner, and not your bed? 2. Did you find it difficult to get

..Functional mobilitt	{		in and out of bed before the surgery?
..Sleep	}		
..Sleep	{	307	Participant 5- CON
..Sleep	}	308	- did you sleep in your bed prior to your hip injury? - do you want to sleep in your room? - is this the typical state of your room?
Accessibility	{	309	Participant 2 - CON
..Functional mobilitt	}	310	do you have difficulty getting into and out of bed? do you have difficulty opening and closing drawers? do you feel there is enough light in here?
..Sleep	{	311	Participant 8 - INT
..Sleep	}	312	1. Is there a reason why you don't sleep in your bed? 2. Do you feel that your dresser is easy to access within the bedroom? 3. What is one thing that you wish you could do in your bedroom, but feel that you aren't able to?
		313	Participant 9 - INT
		314	I would ask how she retrieves her clothes from the bed room I would ask if she used her bedroom for anything prior to her hip surgery and if she would like to use it now.
		315	Participant 4 - INT
		316	Is your bed comfortable? Is it difficult to clean
..Sleep	{	317	Participant 6- INT
..Sleep	}	318	1. Why does Sheila sleep in the recliner? 2. Does Sheila think that her dresser is easy to use? 3. What would help Sheila want to sleep in her bed more often?
..Sleep	{	319	Participant 7-INT
..Sleep	}	320	Why do you prefer the recliner to your bedroom? Is your goal to sleep in your bedroom?
..Sleep	{	321	Participant 3 - INT
..Sleep	}	322	Is there a reason you prefer to sleep in the recliner rather than your bed? Do you get dressed in your bedroom?
..Sleep	{	323	Participant 10- CON
..Sleep	}	324	Why does she sleep in the recliner? What in the bedroom does not work for her?
..Sleep	{	325	Participant 13-CON
..Sleep	}	326	Why don't you sleep in your bed? Do you get dressed in the bedroom?
..Sleep	{	327	Participant 14- CON
..Sleep	}	328	Why does she not sleep in her bed? Do you find it difficult to retrieve or put away clothes?
..Sleep	{	329	Participant 12- CON
..Sleep	}	330	why do you sleep in the recliner? Why do you not spend more time in the bedroom?
Accessibility	{	331	Participant 15- CON
..Sleep	}	332	Why do you choose to sleep in your recliner over your bed? Is your bed at a comfortable height to get in and out of? Are there any additional lights in the room?
..Functional mobilitt			
Accessibility	{	333	Participant 16- CON
..Functional mobilitt	}	334	Is there enough lighting in here so you do not trip over something? Can you reach all of your clothes in your dresser?
..Sleep	{	335	Participant 11- INT
..Sleep	}	336	1) Did you used to sleep in your bedroom before your hip fracture? 2) How do you

..Sleep { ..Functional mobility	ambulate or walk in your bedroom?
..Sleep { ..Functional mobility	337 Participant 17- INT 338 1. How often do you clean in here? Do you have any family that can help you with cleaning? 2. Why don't you sleep in your bed? How difficult is it for you to get out of bed?
..Sleep { ..Functional mobility	339 Participant 18-CON 340 1. Would she like to sleep in her bedroom if it was safer? 2. When was the last time she used her bed? 3. Does she have difficulty picking things up if she drops them?
Question {	341 07:48 342 List 2-3 safety hazards you observe in Sheila's bedroom.
Environment { Accessibility	343 Participant 1 - CON 344 1. low bed, may be hard to get in and out of 2. bed blocks access to the window 3. scattered stuff is a tripping hazard
Accessibility { Environment	345 Participant 5- CON 346 - looks like water damage or mold on the ceiling - clutter on the floors poses as a tripping hazard - seems to have very dim lighting if any at all
Environment {	347 Participant 2 - CON 348 garbage on the floor carpet dresser blocking part of bed
Accessibility { Environment	349 Participant 8 - INT 350 1. Clutter/garbage on the floor 2. The dresser is very tall with no handles
Environment {	351 Participant 9 - INT 352 Low bed Objects on the floor (fall risk) Possibly unstable furniture
Environment {	353 Participant 4 - INT 354 unclean and cluttered
Accessibility { ..Functional mob { Environment	355 Participant 6- INT 356 1. Clutter on the floor can lead to fall risk 2. Bedding, walls, and furniture looks to be in poor condition 3. The height of the bed as well as the bed location (partially blocked by the dresser) decreases her accessibility to utilize it with her current functioning
Accessibility { Environment	357 Participant 7-INT 358 Very cluttered, objects on the ground, space looks unclean, drawers are high on the dresser, bed is in corner of room(only able to access one side)
..Functional mobility { Environment	359 Participant 3 - INT 360 Clutter on the floor could be a tripping hazard. The room is unkempt and dirty, especially looking at the walls, which could be a health hazard if there is mold.
Environment {	361 Participant 10- CON 362 clutter on the floor the bed and dresser are very close together the bed may be difficult to get too as well as get in and out of
..Functional mobility { Environment	363 Participant 13-CON 364 Items on floor low light No supports for balance if not using walker
Environment {	365 Participant 14- CON 366 The clutter on the floor poor lighting Dirt or mold on the walls

Environment	{	367	Participant 12- CON
..Functional mobilit	}	368	there are objects scattered on the ground (trip/fall hazard). there are no arm rests or rails to get in and out of bed.
Environment	{	369	Participant 15- CON
..Functional mobilit	}	370	Clutter around the floor - tripping hazard. Mildew/mold on the wall - bacteria hazard.
Environment	{	371	Participant 16- CON
	}	372	Stuff all over the floor the upper most and lower most drawers of her dresser may be harder to reach
..Functional mob	{	373	Participant 11- INT
Accessibility	}	374	1) Objects on the floor could cause tripping 2) Limited/low lighting 3) Lack of path for walker/lack of safe way to ambulate in room
Environment	{	375	Participant 17- INT
Environment	}	376	1. Dirty/unsanitary walls 2. Dirty/unsanitary and cluttered floors 3. Dresser is right up against/obstructing bed
		377	Participant 18-CON
		378	1. No handles on the dressers 2. Bed is very low 3. Tripping hazards
Question	{	379	07:50
	}	380	Is there anything else you want to ask Sheila before your evaluation ends?
		381	Participant 1 - CON
		382	1. How long have you lived in your home? 2. Do you have family/friends that live nearby?
		383	Participant 5- CON
		384	- is there anything that would make you more comfortable in your bedroom?
		385	Participant 2 - CON
		386	are you able to reach closet rods and hooks? do you have sufficient outlets? is there a light switch at the entrance of every room? do all your windows lock? are the thermostat displays easily accessible and readable? are there smoke/CO alarms? does the front door lock?
		387	Participant 8 - INT
		388	What are some activities that you would like to do in each room of your home, but haven't been able to? What is something that you find most difficult to do in each room of your home?
		389	Participant 9 - INT
		390	I would ask about her goals and what she would like to gain for OT in terms of her home environment.
		391	Participant 4 - INT
		392	no
		393	Participant 6- INT
		394	1. What does Sheila enjoy to do in her home? 2. Which area of the home does Sheila wish she could spend more time in? 3. Is there an area of the home that Sheila feels the least comfortable using and why?
		395	Participant 7-INT

- 396 What are your goals and what can I help you to achieve during our sessions? Do you have any questions or concerns? Are you interested in some small home modifications to help you feel safer in your home?
- 397 Participant 3 - INT
398 Are there other activities you do or would like to do in the home? Do you have any specific safety concerns? How comfortable do you feel living on your own in this space?
- 399 Participant 10- CON
400 What areas in the home are most difficult for you? How have you had to change your routine since your injury? What do you wish you could change? what is the most difficult for you?
- 401 Participant 13-CON
402 Are there any other activities you have difficulties in? Is there anywhere else you like to spend your time? If you could change one thing about your home, what would it be?
- 403 Participant 14- CON
404 What are her goals? Would she like to be able to access her room more?
- 405 Participant 12- CON
406 How does the layout of your home, appliances, furniture make you feel? Do you think there are ways to improve the space and activities?
- 407 Participant 15- CON
408 What could make you happier while living here? Are there any concerns that you personally have with your space?
- 409 Participant 16- CON
410 Does anyone else other than MOWs help you around your home? Do you have support nearby? I would ask her what she likes to do the most and if she is able to participate in her favorite activities.
- 411 Participant 11- INT
412 What are here goals and how we can address them.
- 413 Participant 17- INT
414 What are your goals for therapy? What would you like to work on next time?
- 415 Participant 18-CON
416 1. Is she open to making modifications to her home? 2. Is AE or AT something she is interested in? 3. How safe does she feel living in her home overall?