DEVELOPING AN EDUCATIONAL PROGRAM FOR STAFF IN ASSISTED LIVING AND PERSONAL CARE HOMES ON RECOGNIZING FALL RISK AND FALLS PREVENTION

by

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Assisted living facilities (ALFs) and personal care homes (PCHs) are becoming more common along the spectrum of living arrangements for older adults. These bridge the gap for those who can no longer live independently, but who do not require nursing home care. Federal regulations are established for nursing homes, however very few federal regulations govern ALFs/PCHs. These are primarily regulated by each state, and currently, there are few regulations regarding the training of the staff who primarily provide care to the residents. Falls are a common cause of both morbidity and mortality in older adults. The purpose of this study was to develop an educational program to be provided to non-professional staff in ALFs/PCHs to enhance their ability to recognize increased fall risk in residents, as well as develop an awareness of fall prevention techniques. Because there is very little in the literature regarding training staff in this setting, multiple steps were taken in the development of this program. The topics to be covered in the program were determined by a thorough review of the literature related to falls in older adults, the ALF/PCH setting, educational theory, and training of similar staff in the nursing home setting. Observations were completed on all three shifts (day, evening and night-time) at two local PCHs to identify problems that may be specific to this setting. To further refine content, a survey utilizing the Delphi Method was done, with geriatricians, occupational therapists, physical therapists and registered nurses, all of whom had experience in this setting and expertise

iv

in older adults. A pre-test and post-test was developed, utilizing cognitive interviewing to refine the test questions. The educational program was then presented at six local ALFs/PCHs. Based on pre-test/post-test scores, a statistically significant gain in knowledge occurred through the program. This statistically significant change from baseline understanding of fall risk/fall prevention was sustained over periods ranging from six weeks to three months, based on repeat testing. Based on feedback provided by participants, they generally found this program to be helpful useful in their day to day interactions with the residents.

TABLE OF CONTENTS

LIST OF TABLES

xiii

LIST OF FIGURES

PREFACE

This is dedicated, with much love and gratitude to Mrs. Dorothy M. Hudak and to the wonderful memory of Mr. John Anthony Hudak, Jr., whose unfaltering love and support helped guide me through Life, and gave me the tools I needed to arrive at this point in my life, personally and professionally. Without you (and your lasagna), I never would have all that I have. Thank you.

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1.0   INTRODUCTION

Assisted living facilities (ALFs) have emerged over approximately the last 20 years as an alternative to nursing homes, or as part of the continuum of care for older adults.[1] Responding to a number of factors, such as a preference for alternatives to nursing homes, the increase in the aging population, as well as availability of private funding for development of ALFs, assisted living facilities have become the most rapidly growing type of housing for older adults.[2] While a number of federal agencies have some jurisdiction over ALFs, the primary responsibility for regulating and monitoring these facilities falls to individual states.[3] As such, there is tremendous disparity among educational levels and levels of caregiver training for staff in ALFs.[2] To address this disparity, and to ensure better care for consumers and residents of ALFs, the American Geriatric Society (AGS) developed a position paper, recommending staff training in a variety of areas that impact older adults, including falls prevention.[4]

Falls in older adults are a significant contributor to mortality and morbidity.[5-14] Older adults living in ALFs tend to be more physically and cognitively impaired than those living within the community.[15] Those in assisted living have been described as having multiple medical issues and some have cognitive issues.[2] Older adults in long term care (LTC) tend to fall due to a variety or a combination of physical reasons,[16-17] while community-dwelling older adults tend to fall due to environmental factors.[16] A review article by Marchetti and Whitney[18] illuminates literature demonstrating that individuals with dementia are at increased risk for falls,

1

and increased risk for injuries related to falls. Furthermore, individuals with dementia are less likely to return to their prior level of function.[18] The incidence of falls in institutionalized older adults is approximately three times that of community-dwelling older adults.[16] It is because of the increased incidence and risk of falls for institutionalized older adults that the AGS targeted training in falls prevention for staff in ALFS.[4]

Until 2011, the terms assisted living facilities (ALFs) and personal care homes (PCHs) were used interchangeably in the state of Pennsylvania.[19] Although the definitions have changed somewhat, the population served in each remains similar, as do the initial hiring requirements for staff.[19] For these reasons, the two settings and terms will be both used in this study. The purpose of this study is to develop and test a training program for ALF/PCH staff for identifying and minimizing fall risk factors for residents. The hypothesis is that, after said training, staff will better be able to identify and address fall risk in ALF/PCH residents, as evidenced by improved performance on a post-test administered immediately after the training, and again one month later as compared to a pre-test administered immediately before the training.

Prior to developing the training module, the staff, residents and the environment at two PCHs were observed for potential environmental and behavioral contributions to increased fall risk for their residents (under the prior definition, both facilities were referred to as ALFs; they acquired their new designation in 2011, with no change in current residents or staff). Also, the administrators at the same two PCHs were interviewed. These observations and interviews were conducted in order to better target the training module to the needs of ALF/PCH staff and residents. Once these observations and interviews were completed, a survey utilizing the Delphi Method was conducted. Professionals with expertise in older adults, as well as the ALF setting were surveyed to identify which issues were of key importance to present to ALF/PCH staff

regarding falls in older adults. Once the observations and survey were complete, a training module was developed to help staff identify and address fall risks associated with their residents and with the environment within ALF/PCHs. A brief multiple choice/short answer test was also developed to be administered before and after the module, and again approximately one month later. The module was presented to various local ALFs/PCHs that agree to participate. The data were then analyzed to determine if the education module was successful in training the staff to recognize and address fall risk in these assisted living facilities. The program and pre/post-tests were then re-evaluated for strengths and areas in need of improvement.

2.0   BACKGROUND

The percentage of older adults who make up the population of the United States is expected to grow from about 12% in 2002 to nearly 20% of the population by the year 2030.[20] Trends in those receiving Social Security benefits show an increase in the number of individuals over the age of 65 receiving benefits from 2002 to 2007, with an even larger increase in the number of individuals over the age of 85.[21] As of 1999, it was estimated that the number of assisted living beds in the United States ranged from 800,00 to 1,500,000.[22] It is expected that the number will double by the year 2019.[22] This increase in need is expected for a couple of reasons. Because of advancements in medical interventions, people are living longer,[23-24] however also living with morbidity and disability longer.[25-26] Furthermore, the population referred to as "the Baby Boomers," a large cohort of individuals born post-World War II, between the years of 1946 and 1964, are aging.[27] As a result, the need for supportive housing options is expected to increase.

2.1   ROLE OF ASSISTED LIVING FACILITIES IN THE CONTINUUM OF CARE FOR OLDER ADULTS

There are more options for living arrangements for adults as they age.[20] Some older adults are able to remain in their own homes. For those who want or need to make other arrangements, options range from independent living to nursing home care. Senior apartments provide

accessible housing, however the residents live independently.[20] Senior apartment complexes

may also offer transportation and social activities.[20] Some may choose to enter continuing care

retirement communities. In these communities, older adults may live in a house or an apartment

independently, but move into assisted living or skilled nursing facilities as their needs change.

These moves along this continuum may be temporary or permanent, depending on the needs of

the individual.[20] For those requiring assistance, assisted living facilities or nursing homes are

options.[20]

Assisted living facilities vary greatly in the types of housing and the services provided, as

well as the types of individuals they will service.[21] They fill the gap along the continuum of care

for older adults between independence and the complete care offered by skilled nursing

facilities.[22] ALFs may offer individual apartments, room and board, laundry assistance,

assistance with activities of daily living (ADLs), medication assistance, as well as other

services.[22] The level of acuity of residents allowed to reside in ALFs can vary from facility to

facility, and from state to state.[22] Some states may vary the name of the type of facility,

depending on the services provided and the acuity of the residents, including terms such as

assisted living facilities, personal care homes (PCHs), residential care facilities, and adult

homes.[22, 28] Fees also vary greatly from state to state,[29] and extra charges may apply for certain

services, such as medication administration, transportation or other services.[22]

Unlike nursing homes (NH), there is very little federal government regulation of ALFs,

so it falls to each individual state to establish regulations.[22, 27, 30] States vary greatly in their

regulation of ALFs,[22, 31] and because most residents are private pay, even state regulation may be

limited.[4] Furthermore, states vary greatly in the information made available to consumers

regarding both services and regulations.[22, 31-32] In 2005 and 2006, two states (New Hampshire

and Delaware) and the District of Columbus did not have or did not make available regulations for ALFs.[31-32] In states where regulations are clear and assistance is available to help them interpret the regulations, ALFs are better able to show compliance within the requirements.[22] There are no established standards for provisions of care or training of staff in ALFs.[4]

2.2   TRAINING OF STAFF IN ASSISTED LIVING FACILITIES

As described above, regulation for ALFs is left to each state.[22, 31] Regarding staff, the requirements for educational background, as well as the requirements for job orientation and ongoing training are different from state to state.[22, 31-34] Significant variations exist among states in requirements for eligibility of staff for hire, training for new hires, and ongoing staff training and education.[34] While most states require caregivers to be at least 18 years of age, some will hire staff as young as 16, and others require staff to be 21, although that minimum age is usually reserved for supervisory staff.[31-34] Some states require a minimum of a high school education or the equivalency, while others do not.[31-34] While some states require that new staff be trained in a very formalized manner prior to or immediately upon hire, others require less formalized "on-the-job" training.[31-34] An overview of the various occupational requirements in the state of Pennsylvania illustrates the limited oversight of training of direct care staff (those who work directly with the residents) in assisted living.[35] Providers of beauty services such as cosmetologists, estheticians, nail technicians and barbers all have minimal requirements for training, ranging from 1250 hours (cosmetologists and barbers) to 200 hours (nail technicians), as well as licensure by the state, which is contingent on passing a state licensure exam.[35] Other occupations which involve serving the public are similarly regulated.[35] There are no

requirements for the minimal level of training for direct care staff in ALFs, nor any licensure, or any type of state board requirement.[35] The only requirements in Pennsylvania are that staff be 18 years of age or older, have a high school diploma, or have passed an equivalency exam.[33] In lieu of a high school diploma or the equivalent, "active registry status on the Pennsylvania nurse aide registry" is acceptable.[33] There is no mention in the requirements of any ability of the caregiver to speak English.[33] Under certain circumstances, exceptions may be made to even those minimal requirements.[33]

Variability also exists in the training expected of staff responsible for certain tasks, such as medication administration.[31-34] The presence of a registered nurse (RN) or licensed practical nurse (LPN) on staff or as administrators is required in some states, however not all.[31-34] Not all states require all of the caregiving staff to speak English.[31-34] Because the majority of residents of ALFs are older adults,[36] and because of the variability of training provided to caregivers in ALFs,[31-34] the American Geriatrics Society published a position paper putting forth what the AGS considered should be priority areas of training for all caregiving staff in ALFs, including:[4]

> "ALF staff should be knowledgeable and skilled in
> implementing important components of geriatric care,
> including, but not limited to, safe medication administration,
> falls prevention, incontinence care, communication
> techniques, dementia care, and skin care and be
> able to recognize the changes that can signal acute illness,
> delirium, and depression." [p.536]

2.3   FALLS IN OLDER ADULTS

Risk of falls and falls with injury increases with age,[37-39] resulting in considerable morbidity and mortality in older adults.[5-14] In a prospective study, Hornbrook et al found that 44% of 1,571 adults aged 65 and older fell at least once during a 23 month period, and 20% fell two or more times.[40] Over 26% of the "fallers" reported one or more injuries sustained as a result of a fall.[40] In a separate prospective study by Hausdorff et al, nearly 40% of their community-dwelling older adult subjects reported falling at least once over the course of one year.[41] Their subjects were 70 years old or older.[41] In a prospective study of 96 individuals between the ages of 60 and 88 years old, 56% fell one or more times over the course of one year.[42] Some sources report that 20-30% of adults aged 65 and over have fallen during the course of a year.[7, 9-10, 12, 43-46] Although some of the above research reports slightly higher percentages of falls in older adults, it is frequently accepted that over 30% of adults aged 65 and over are likely to fall.[37] This is the percentage accepted by the Centers for Disease Control and Prevention (CDC),[47] and supported in the literature reviewed by Chang et al.[48]

While researchers may vary somewhat in their definition of a "fall," each definition typically suggests that a fall is an unexpected loss of balance, with the individual ultimately coming to rest on a lower surface or to the ground.[11, 40, 49-52] Some authors may include other qualifiers, in that a fall may be defined as an unexpected loss of balance, resulting in an individual coming to rest on the ground on his/her knees, belly, buttocks or back.[49-50]

2.3.1   Injuries Sustained Due to Falls

According to the National Health Interview Survey, for the years 1997-2007, falls were the leading external cause of injury for each year for all age groups, accounting for 38% of all injuries in 2007.[39] Injury rates from falls were higher for females than males in all age groups.[39] For the years 2004-2007, this difference was especially great for individuals over the age of 75, with 55% more females than males being injured by a fall.[39] The injury rate due to falls for those ranging in age from 65-74 years during 2004-2007 was 53.9, which is much higher than the rates for lower age groups.[39] In younger age groups, the next highest rate was in those aged 15 years or younger, at 48.5, with age groups in-between the young and old were even lower.[39] For individuals 75 years of age and over, injury rates from falls during years 2004-2007 increased markedly relative to younger groups, to 121.8.[39] The actual fall rate for older adults would be much higher, as this survey did not include older adults who are homeless, in ALFs or in nursing homes.[39] Rubenstein et al[53] analyzed the data from sixteen different studies, and found the calculated mean fall incidence of older adults in LTC to be three times that of community-dwelling older adults. This higher falls rate incidence was credited to both the increased frailty of institutionalized older adults, as well as better methods of tracking falls.[53] Given that the number of older adults is increasing, it is likely that falls in older adults will continue to rise as well.[54]

Falls result in both considerable morbidity and mortality in older adults.[5-14, 37, 54-55] Sterling et al reported that adults over the age of 65 had a higher incidence of falls, greater severity of injury due to falls, and an increased rate of mortality resulting from falls when compared to individuals aged 65 years and younger.[55] The CDC has identified falls as the primary reason for death from injury in older adults for the years 2000 – 2006.[56] According to

the CDC Fact Sheet on Falls Among Older Adults (2005), in addition to being the most common cause of death from injury, falls are also the most common reason for non-fatal injuries, as well as the most common cause for hospital admission among older adults.[47] Unintentional falls were responsible for the deaths of 15,800 individuals aged 65 years and older.[47] Furthermore, approximately 1.8 million older adults were treated in emergency departments for falls; of those, over 433,000 were admitted to the hospital.[47] Rates for falls in older adults have continued to rise.[47]

Death rates from non-intentional falls in older adults rose 55.3% between 1993-2003.[57] Between 2001-2005, the rate of non-fatal falls only increased slightly (2.8%), however the difference is likely higher, as only those who reported to emergency departments were included in the figures.[57] Many non-fatal falls go unreported.[57] While about 72% of hospital admissions due to hip fractures in older adults are women (2003 rates), and women are approximately 67% more likely to sustain an non-fatal injury from a fall, older adult males have a 49% higher fatality rate (2004 age-adjusted rates) than females.[47]

In 2008, unintentional falls remained the number one cause of injury in older adults.[58] A variety of injuries may occur from falls, including but not limited to fractures, traumatic brain injury, soft tissue injuries (bruises, wounds and lacerations), sprains and strains, joint dislocations/distortions, and injuries classified as "other."[54, 59] Falls are the leading cause of both fractures and traumatic head injuries in older adults.[47] At least five percent of older adults who fall sustain fractures.[7, 37, 53, 60-62] In a prospective study by Tinetti et al,[7] twenty-four percent of the subjects who fell sustained serious injuries, including six percent who sustained fractures. These fractures may occur throughout the body, generally in the spine, hip, forearm, leg, ankle, pelvis, upper arm and hand.[47]

Among the various types of fractures sustained by older adults, hip fractures occur most frequently.[63] The rate of hip fractures is much higher than that of the next most commonly fractured site, the wrist (73.9 hip fractures per 100,000 vs. 37.8 wrist fractures per 100,000 from July 1991 through June 1992).[63] According to the CDC Fact Sheet on Hip Fractures Among Older Adults, over 90% of all hip fractures are the result of a fall,[64] while a study by Grisso et al[65] found that as many as 97% of hip fractures in women were due to falls. In 2006, hip fractures in older adults were associated with 38% of hospitalizations and 15% of deaths caused by injury.[66] Although fractures of the hip are the most common fractures due to falls in older adults, only about 1% of falls result in a hip fracture.[67-68] After sustaining a hip fracture, death or increased morbidity often follows.[69-71] After hip fracture, 99% of both nursing home residents and community-dwelling older adults were admitted to the hospital.[71] Approximately 5% of these individuals died prior to discharge from the hospital.[71] Approximately 20% of older adults who fracture their hips died within a year post-fracture, compared to the 11% mortality rate of age-matched controls.[71] Some authors found an increase in mortality rate in individuals 65 years and older within the first six months[69-70] post-fracture compared to the expected death rate of individuals of the same ages, with the greatest mortality rate occurring within the first two months post-fracture.[70]

Of those older adults who survive their hip fracture, many have ongoing disability, with a significant temporary or permanent decline in functioning.[71] In a population-based study by Leibson et al[71] of community-dwelling older adults who fractured a hip, 61% were admitted to a nursing home either immediately from the acute care hospital, or discharged to home but admitted to the nursing home within a very short time. At a one-year follow-up, 20% of the community-dwelling older adults were residing in a nursing home, compared to only 7% of age

11

and gender-matched "non-hip fracture controls."[71] These authors also used the Rankin Scale of Disability to determine the level of disability before and after hip fracture. This is a five-point scale, with a score of 1 indicating no disability, and 5 indicating "severe disability," or essentially complete dependence.[71] At one year post-fracture, 49% of the surviving subjects had returned to their prior level of functioning.[71] The remaining survivors demonstrated a significant decrease in function as follows: 37% were one Rankin Unit higher, 14% were two Rankin Units higher, and 1% were $\geq$ 3 Rankin Units higher.[71] For comparison, the authors followed age and gender matched controls for the same time period. Of these, 2% were one Rankin Unit lower (i.e., these individuals improved in function), 82% remained at the same level, 13% were one unit higher, and 3% were two or more units higher.[71] Individuals who had fractured their hips had Rankin Scores that were significantly higher (i.e., worse) at one year post-fracture than controls who had been followed for the same year (3.2 ± 1.2 vs. 2.3 ± 1.3, respectively), as well as a significantly greater change in disability from baseline over the course of the year.[71]

2.3.2   Risk Factors Related to Falls in Older Adults

Unintentional falls are the most common cause of death among older adults,[56] as well as the most common cause of non-fatal injury.[58] Numerous factors come into play contributing to increased risk of falls in older adults compared to younger adults. As individuals age, their risk of falling, along with their risk of injury due to falling increases.[37, 55, 62, 72-75] Gender also plays a role, as older women are more likely to fall than older men.[67, 74-77] Gender also plays a role in injury and mortality, with women more likely to sustain an injury from falling,[37, 77] and men more likely to die from a fall.[78]

Numerous changes occur in the systems of the aging body, some typical <u>and</u> some pathological that can contribute to the increased risk of falls. The visual, vestibular and somatosensory systems all provide feedback that is important to the maintenance of postural control.[79] According to Shumway-Cook and Woolacott, postural control is the ability to control the body's position in space for the dual purposes of stability and orientation.[79] The visual system provides information regarding the position of the body relative to the environment; the somatosensory system provides information regarding the position of the body relative to the supporting surface; and the vestibular system provides information of the position and movement of the head relative to gravity.[79]

2.3.2.1 Role of visual system in postural control

Using surrounding objects as a reference for verticality, vision provides information regarding the motion and position of the head.[79] While visual input may be both foveal (central) and peripheral, it appears that peripheral vision may be more important in the maintenance of balance.[80] Visual stimuli may be perceived either as motion of self, or as motion of an object.[81] Vision appears to help stabilize posture by providing information regarding the position of the head and trunk in space.[82] Visual input is important in controlling the position of the trunk and head, especially at higher frequencies.[82]

Vision may be a dominant sense in the maintenance of posture,[83] especially in more demanding postural tasks.[81] In a study by Bronstein,[83] when subjects were provided with "faulty" visual information (moving visual scene while the subject remained still), they first made postural adjustments consistent with the room's sway, followed by correction. With repeated trials, no sway was noted with the room. Bronstein suggests that this indicates that subjects first relied on their vision, and then their somatosensory and vestibular senses for

13

correction. Visual information can be suppressed in the presence of conflicting information from the somatosensory and vestibular systems.[83] Subjects standing on a compliant surface (foam,[83] sway-referenced force platform[84]) demonstrated difficulty habituating to the moving scene, suggesting that, in the absence of pathology, somatosensory input may be relied upon more readily than vestibular information in the presence of visual conflict.[83-84]

2.3.2.2 Role of vestibular system in postural control

The vestibular system identifies the position of the head in space. The receptors of the vestibular system are the semicircular canals and the otoliths. The semicircular canals utilize angular acceleration[79, 85] as feedback, while the otoliths utilize linear acceleration[79, 85] once the stimulus threshold (i.e., amplitude and frequency of sway) for the sensor has been met.[85] The semicircular canals are more sensitive to fast movements, while the otoliths are more sensitive to slower movements.[79]

Because of the role of the vestibular system in determining head position, it seems to play a particularly important role when a "hip strategy" is necessary for the maintenance of balance.[86] A hip strategy is a movement strategy of the body in response to a relatively large and/or fast perturbation, or when standing on a small or compliant support surface. In such circumstances, significant movement of the head occurs. The purpose of the strategy is to maintain postural control, i.e., the center of mass (COM) over the base of support. With the hip strategy, trunk rotation occurs around the hips in response to a postural displacement,[86] with anti-phase rotation around the ankles.[79] This maintains the position of the head and trunk, and therefore the COM over the base of support. Individuals with vestibular loss do not demonstrate this strategy in response to the above-described types of postural displacement,[86] suggesting that the movement of the head may be undetected due to the loss of the vestibular inputs.

14

The above study also suggests that the response to vestibular input tends to occur at the trunk, rather than at the level of the whole body. As the displacement of the head occurred, the body responded with a hip strategy to maintain postural control. This observation was further supported in a study completed by Horak and Hlavacak.[87] In response to galvanic vestibular stimulation, it was noted that the subjects responded with relatively increased trunk movement in space rather than on the center of mass of the body. Vestibular stimulation tends to have a greater impact on trunk movements rather than whole body movements.[87]

2.3.2.3 Role of somatosensory system in postural control

Through cutaneous, muscle and joint receptors, the somatosensory system provides feedback regarding the position of the body in space, and the position of the various body segments in relation to one another.[79] It appears that while feedback from the visual and vestibular systems help to control the head and trunk movements during postural adjustments, feedback from the somatosensory system, particularly the ankle joint musculature, helps to control the leg muscles.[86] In a study designed to examine the role of the somatosensory system in postural control, Horak et al[86] induced somatosensory loss on six healthy volunteers using ankle cuffs to create hypoxia. Each subject was tested on a moving force platform at small, medium and large displacements, both before and after the hypoxia-induced anesthesia. Electromyographic (EMG) recordings were done of lower extremity and trunk musculature. Prior to the induced-anesthesia, EMG recordings showed that distal muscles were activated first in response to the displacements. After the anesthesia, proximal musculature was activated early in response to the displacements, resulting in increased hip strategy.[86]

Individuals with somatosensory loss due to a peripheral neuropathy have a higher incidence of single and repeat falls when compared to age-matched controls without

neuropathy.[88]   Because of the neuropathy, however, it is possible that ankle muscle weakness also contributed to the falls.   The nature of the study did not differentiate between sensory loss and motor loss.   Instead, only the presence or absence of peripheral neuropathy based on EMG studies versus fall occurrences was analyzed.[88]   This, taken with the above study by Horak et al[86] suggests an important role for the somatosensory system in the maintenance of postural control.

Although Bronstein[83] suggests that vision is the dominant sense in the maintenance of postural control, other authors[89-92] suggest that the somatosensory system is of primary importance.   Gurfinkel et al[90] placed 12 healthy volunteers on a tilting platform.   In some tests, the subjects wore frosted glasses to limit visual input.   In other tests, their heads were stabilized to limit stimulation of the vestibular system.   Still in other tests, the subjects were specifically instructed to try and use vision to help stabilize their body position as the platform tilted.   The platform was tilted while EMG recordings were taken of foot and ankle musculature.   The authors found that stabilizing the head had little impact on postural responses, and adding vision slightly improved, but did not dramatically alter, the responses to the tilt of the platform.   This suggested to the authors that, while interaction of all three sensory systems contributes to the maintenance of balance, the somatosensory system seems to be of primary importance, followed by the visual system, and lastly, the vestibular system.[90]   Horak[91] cites numerous studies with similar observations: the absence of vestibular information does not significantly alter early postural responses to surface translations, and vestibular information is not necessary to trigger lower extremity musculature in response to translations.

2.3.2.4 Summary of sensory contributions to postural control

The somatosensory, visual and vestibular systems all provide information to the central nervous system to aid in the task of postural control. It appears that vestibular and visual inputs primarily

16

affect trunk control, while somatosensory inputs primarily affects control of the distal musculature. The body utilizes different postural response strategies to maintain balance. These strategies are dependent, in part, upon the type and strength of the stimulus causing the imbalance, the environment, and the type of sensory input. Under normal circumstances, input from the different systems is processed by the central nervous system, and input from one system can influence the response to input from another system.[87, 91, 93-94] Under altered conditions, in which the input from one system may not be available or may be impaired, it appears that the other systems can compensate.[94] For example, it is possible to stand and walk with one's eyes closed, thus eliminating visual input. Horak and Hlavacka[87] demonstrated an increase in vestibulospinal sensitivity in individuals with somatosensory impairment, either due to neuropathy, or due to temporary alterations of somatosensory input while standing on foam. The roles and interactions of each system in the maintenance of postural control are complex. Most of the above studies examined postural control only in stance, quiet and perturbed. Postural control in daily activity is much more complex than simple standing. Many other factors come into play to maintain posture control during all activities, including standing, walking on even and uneven surfaces, climbing stairs, reaching for dishes from the cupboard, or even playing sports.

2.3.2.5 Other factors contributing to postural control

The feedback systems described above play a large role in adaptive postural control. Adaptive postural control allows the body to adapt to changes in the environment or to changes in the demands of the task. Adaptive postural control allows adjusting for a misstep or for walking on an uneven surface.

Anticipatory postural control is also important for the maintenance of balance. Anticipatory postural control refers to adjustments made by the body prior to movement or task performance. These adjustments are based on prior experience and learning.[79, 95-96] This concept is demonstrated in a study by Cordo and Nashner.[97] After a tone was played, with varying support conditions, a push or pull force was exerted on the subjects' arm through a handle. EMG recordings revealed activation of postural muscles prior to the onset of the force, in apparent anticipation of the force. In another component of this study, rather than respond to a force generated at the handle, the subjects were instructed to initiate a force against the handle at the sound of the tone. Again, EMG activity revealed activity in lower extremity muscles prior to the self-initiated force produced at the arm.[97]

In a separate study,[98] 20 adult volunteers responded to "expected" and "unexpected" perturbations on moving platforms. Outcomes were measured by EMG, force, and sway. Perturbations were provided in a series of the same velocity or amplitude (expected), and in random order of varying velocities and amplitudes. Subjects responded to the type of perturbation they were expecting. When, based on experience, they were expecting a large perturbation but a small one was provided, the subjects responded as though they received a large perturbation. Prior experience affected future postural control mechanisms, despite the sensory feedback at the time of the actual postural disturbance.[98] This effect appeared to be larger with amplitude than with velocity differences, and was more apparent in sway and force measurements than in EMG recordings.[98] Expectations based on prior experience help to shape the postural response in anticipation of postural disturbance. Such anticipatory postural adjustments are made in preparation for such activities as reaching, lifting an object, or walking on ice.

Another factor that appears to impact upon one's ability to maintain one's balance is attention. In studies in which postural stability has been assessed while asking the subjects to perform a cognitive task, degradation was noted in the postural control of the subjects.[99-104] Changes in postural recovery strategies were observed in young and older adults, with older adults being more affected, when required to recover from a perturbation while performing a concurrent task.[105] Conversely, increased postural demands appears to have an adverse effect on the performance of visual-tracking skills[106] and on reaction times, especially in older adults,[99, 107-109] suggesting that as postural demands increase, more attention must be directed towards maintaining postural stability. In studies involving gait, alterations in gait were also noted with the addition of cognitive tasks.[101, 107, 110]

Biomechanical factors also affect postural control. Base of support impacts upon stability, with a wider stance resulting in greater stability.[111] Musculoskeletal issues such as muscle strength,[79, 112] and range of motion[79, 112-114] also contribute to the maintenance of balance.

2.3.2.6 Age-related changes affecting balance

As the body ages, changes in the various systems that contribute to postural control may occur. Changes in the visual, vestibular, somatosensory, sensorimotor, and musculoskeletal systems and cognitive process may contribute to decreased postural control. Changes in the above systems are not uniform, with significant variance occurring from person to person. Age-related changes are summarized in Table 1.

Table 1. Age-related system changes

Visual
    Decline in visual acuity[115-116]
    Impaired color discrimination[115]
    Decreased or absent pupilary and corneal reflexes[115]
    Ptosis[115]
    Decrease in convergence, smooth pursuit, saccades, and optokinetic nystagmus[115]
    Impaired light/dark adaptation[116]
    Increased sensitivity to glare[116]
    Decline in depth perception[116]
    Decreased visual field[116]
    Decreased contrast sensitivity[116]
    Slowed response time to detect visual stimuli

Vestibular
    Decline in hair cells in utricle, saccule and semicircular canals[115]
    Neuronal loss in vestibular nucleus[115]
    Morphologic changes of vestibular system[115]

Somatosensory
    Morphologic changes in receptors, nerves and nerve terminals[115]
    Decline in number of receptors[115]
    Decline in number of afferent nerve fibers[115]
    Degeneration of the dorsal columns of the spinal cord[115]
    Possible increased nerve conduction velocity due to decreased distance between
        nodes of Ranvier[115]
    Increased latencies and decreased amplitude of somatosensory evoked potentials[115]
    Decline in light-touch and two-point (i.e., spatial acuity) discrimination[115]
    Diminished vibratory sense[115]
    Increased pain and temperature thresholds[115]
    Impaired proprioception[115]

Musculoskeletal
    Diminished strength[115-116]
    Decrease in Type II (fast twitch) muscle fibers[115]
    Decrease in number of alpha-motor neurons, with increase in size/decrease in
        number of motor units[115]
    Cellular changes in Type I and Type II muscle fibers (in transverse tubules,
        sarcoplasmic reticulum and mitochondria, as well as changes in enzymes)[115]
    Changes in structure of motor nerves (thickening of epineurial and perineurial
        sheaths, fibrosis of endoneurial sheath)[115]
    Decrease of motor nerve conduction velocities[115]
    Degeneration of neuromuscular junction[115]
    Decrease in motor unit discharge rate[115]
    Increase of co-contractions of agonist/antagonist muscles[115]
    Increased stiffness of muscles and tendons[115]
    Altered presynaptic inhibition, with impaired ability to modulate motor
        responses[115]
    Decrease in bone density, resulting in diminished strength of vertebra[117]
    Alterations in intervertebral discs (thickening of collagen, loss of water in nucleus
        pulposus, diminished disc height)[117]
    Degeneration of tensile ability of spinal ligaments[117]
    Decrease in thickness and structure of articular cartilage[116-117]
    Increased thoracic kyphosis[116]
    Decreased range of motion in the hips and knees[116]

Sensorimotor
    Diminished amplitude of reflexes, with slight slowing[115]
    Decline in conduction time within CNS[115]
    Increased reaction time (less prominent in physically active older adults)[115]

Cognitive
    Memory loss, primarily recall memory[118]
    Possible decline in problem-solving (fluid intelligence) and creativity[118]

Other
    Decrease in sensitivity of baroreceptors[6]

In addition to age-related changes in body systems, age-related changes in function have also been noted. Although older adults are capable of performing fast movements, slowed movement with decomposition of movement is frequently demonstrated.[115] Greater variability in force output by muscles may also be noted.[115]

Changes in gait may also be observed. Older adults tend to ambulate with decreased gait speed, decreased step length, and increased double support time.[115-116, 119] In addition, older adults tend to demonstrate decreased step height.[116]

The boundaries of postural stability appear to decrease with age.[120-121] The functional base of support, or the proportion of anterior-posterior foot length utilized in maximal forward and backward leaning, also decreases with age.[120] Over one hundred volunteers between the ages of twenty and ninety were tested on a force platform. Subjects were instructed to lean as far forward as possible and backward as far as possible without losing balance, and to maintain each position for eight seconds while center of pressure (COP) position was measured via the force plate. It was found that COP displacement remained fairly stable among volunteers until about the age of sixty. Beginning in subjects approximately sixty years old, the researchers noted that COP displacement began to decrease, indicating a decrease in what the authors termed "functional base of support."[120] Subjects were utilizing a smaller proportion of their base of support, indicating a decrease in stability with increased age.

A number of these changes have been associated with increased incidence of falls in older adults. When compared to a group of "nonfallers", elderly "fallers" were shown to have impaired dark adaptation,[122] or other visual deficits.[6, 123-125] Decreased joint range of motion has also been associated with falling, when groups of elderly fallers and non-fallers were compared.[12, 113-114] Decreased sensation[6, 92, 126-128] and decreased strength,[12, 14, 92, 123, 126, 128-131] as

well as changes in gait,[6, 123, 128, 131] have also been associated with decreased postural stability or increased falls in the elderly. In a study comparing muscle endurance in younger women, older women without a history of falls and older women with a history of falls, it was found that women with a history of falls demonstrated muscle fatigue more quickly and muscle recovery more slowly than the other two groups.[132]

Increased attentional demands have also been associated with falling. In a study comparing the effects of attentional demands on postural sway in young adults, older adults with no history of falls and older adults with a history of falls, the effect of a choice reaction auditory task was compared under six different sensory conditions.[103] The addition of the auditory task had no effect on the younger adults under any of the sensory conditions. Older adults with no history of falls demonstrated increased postural sway with the addition of the auditory task only when both visual and somatosensory inputs were removed. Those with a history of falls demonstrated increased difficulty with the addition of the auditory task under all sensory conditions, demonstrating loss of balance as the sensory conditions became more difficult.[103] Another study comparing similar groups utilized sentence completion and a visual perceptual matching test revealed some decrements in postural stability in all three groups.[104] Little difference was noted between the young adults and the healthy older adults in quiet stance on a firm surface with no tasks. As the sensory and cognitive tasks became more difficult, healthy older adults demonstrated more postural instability than the young adults. Older adults with history of falls performed significantly worse than the other two groups under all conditions.[104]

In a study by Lundin-Olsson et al,[133] forty-two older adults were tested using the Timed Up and Go (TUG), a timed ambulation test, with and without carrying a glass of water, and then were followed for the next six months to determine falls. All subjects required increased time to

complete the TUG while carrying the glass of water. Of ten subjects who demonstrated an increase of 4.5 seconds or more over the TUG without carrying the water, seven fell over the next six months.[133] Taken together, these studies suggest that, with aging, more attention is required to maintain postural control. Postural control requires even greater attentional demands for older adults with impaired postural control. When other activities require the attention of an older adult, especially those with poor postural control, they demonstrate even greater difficulty maintaining balance. This has tremendous functional implications. In order to be functional, individuals must be able to maintain balance while performing other tasks: carrying objects, talking, putting away groceries, or even following a map. Dual tasking may put some older adults at a significant increased risk of falling.

In addition to changes in the postural control systems, there are other factors have been identified that contribute to the increased risk of falls in older adults. These are summarized in Table 2. As the number of risk factors an individual has increases, so does the risk for falls.[7] In addition, it appears that an interaction of small declines in multiple areas may increase risk of falling.[134]

Table 2. Risk factors related to falls in older adults

Recent hospitalization (≤ 1 month)[135]
Decline in mobility[123, 135] or activities of daily living[123]
Cognitive decline[77, 123, 135-138]
Abnormal stepping[136]
History of palpatations[136]
Abnormal response to push or pressure[136]
Nocturia[139]
Use of assistive device[123]
Arthritis[123]
History of falls[77, 123]
Depression[123]
Age > 80 years[123]
Balance[77, 123] or equilibrium[77, 140] deficits
Impaired hearing[77, 140-141]
Impaired reaction time[140]
Medications: multiple, particularly sedatives,[77, 137, 141-142] antidiuretics[141-142] antidepressants,[77, 137, 143] and anti-hypertensives[77]
History of stroke[144]
Parkinson disease[144]
Presence of ≥ 2 chronic conditions[77]
Gait impairment/slower walking speed[41, 77]
Presence of foot or foot/ankle problems[145-147]

2.3.2.7 Extrinsic Risk Factors for Falls

Other factors contribute to falls in older adults, known as extrinsic factors. These are related to environmental issues that disrupt an individual's equilibrium. In younger individuals, this disruption can frequently be compensated for, thus preventing a fall.[99, 107-109] In older adults, however, it appears that the interaction of extrinsic (environmental) and intrinsic (age-related physical and physiological changes within the body) factors contribute to some falls.[148] In a study of older adults in residential settings, Kallin et al[149] found that 8% of the falls recorded over the course of a year were due to environmental factors and a contributing factor in another 17% of falls. In a prospective study of 325 community-dwelling older adults, all of whom had a history of falling in the previous year, environmental factors were found to have a role in 47% of the falls that occurred during the 52-week follow-up.[150] For older adults reporting to the ED of a county hospital after a fall, 95% of those with injuries reported falling around or in the home,

with the majority of the falls reportedly occurring in the bedroom or bathroom.[151] Bedrooms and bathrooms are frequently crowded with furniture, and bathroom floors can be slippery.[116, 152] Both the bathroom and the bedroom are likely to have throw rugs, which can create a tripping or slipping hazard.[116] Other extrinsic contributors to increased fall risk can be found in Table 3.

Table 3. Environmental factors related to falls in older adults

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Ice/snow[153]
Slippery surfaces (floor)[116, 149, 154-156]**[148, 157-158++159-162]
Clutter/obstacles[116, 149, 154-156]**[148, 157, 160, 163]
Glare[116, 154]
Uneven walking surfaces[154, 157, 160]
Lack of color contrast[154]
Improper bed height (in-patient institutions)[116, 154, 156]**[158++]
Long hallways without places to rest (institutions)[116, 154]
Urinary collection bag (institutions)[149] and other equipment attachments[158++]
Inadequate/stressed staffing (institutions)[148]
Poorly/inadequately trained staff (institutions)[148]
Unlocked/unsecured bed wheels (institutions)[116]
Bedrails[116, 158++159]
Poor/low lighting[116, 154-155, 157-158, 161-163]
"Out of reach" storage areas/objects[116, 155, 157]
Non-secured area rugs[116, 155]
Absent or loose grab bars/hand rails[116, 155, 158++161-162]
Furniture too high/low[155] and/or unstable[116, 156]**[161]
Difficult to reach electrical outlets/light switches[155]
High entrance threshold[155]
Home in urban location[155]
Assistive devices/ambulatory aides (possible misuse)[149, 156]**[148, 158++]
Inappropriate/ill-fitting footwear[116, 149, 156, 164-165]**[157-158++]
Hip protectors[149, 156]**
Defective equipment[149]
Clothing[149]
Environmental markers[158++162]
Doorway and furniture design[158++]
Thick carpeting[116]
Overly soft mattresses[116]

**Cozart and Cesario – review article, search over previous 15 years of articles related to falls in hospitalized elderly
++Hignett and Masud – review article

In addition to environmental issues, footwear is an extrinsic factor than may affect risk of falling for older adults.[116, 145] In institutions such as hospitals, inpatient rehabilitation centers, ALFs, and NHs, non-slip socks are frequently used as footwear. While appropriate shoes would be optimal,[52] they are not always feasible.[166] For physiological benefits, ambulation is

encouraged, however, issues such as comfort, availability of shoes, patient cognition and convenience affect compliance with wearing shoes consistently, if at all.[166] Non-slip socks have been developed as an alternative to shoes to enable convenience and comfort and ideally, prevent slippage-type falls.[116, 166] Non-slip socks are socks with a tread on the sole of the sock, with the idea that the tread will prevent slipping accidents.[166] Some newer version have the tread on both the top (dorsal) surface and the bottom (ventral) surface of the sock, so that there is no real top or bottom − if the sock turns on the person's foot, the contact surface will still have a tread. In some cases, these may be used over compression stockings to prevent deep vein thrombosis (DVT) while allowing the patient to walk, also an important prevention for DVT.[166] The treads on the socks might provide superior traction compared to the potentially slippery compression stockings.[166]

Meddaugh et al found socks made of terry cloth with the non-slip treads reduced falls (from 8 falls to 1 fall) from slipping in urine spills in a Specialty Care Unit for individuals with dementia.[167] However, during the course of this study, there was a significant increase in the number of individuals who were "found on the floor" (an increase from 1 fall to 5 falls) during the follow up period − unexplained falls in which the individual was simply found on the floor.[167] The authors do not address this issue in any of their discussed outcomes,[167] however, given the increase in unexplained falls, it is difficult to determine if the non-slip socks truly had a benefit or perhaps had a benefit under one circumstance and became a hazard under another.

To more objectively determine the slip protection afforded by non-slip socks, Chari et al devised a 2-phase study to determine the resistance to slippage of non-slip socks vs. compression stockings vs. bare feet.[166] These Australian authors first used a governmental-approved test that is standardized to test the slippery nature, and thus the safety, of various flooring surfaces − the

Wet Pendulum test.[166] The authors reversed the test by standardizing the floor surface to 2mm hospital-grade vinyl in order to test the different kinds of foot coverings.[166] The surface was wetted down, and then samples of compression stockings and different brands of non-slip socks were taped to the pendulum.

The second phase of the study involved volunteers testing the various foot conditions on a ramp: non-slip socks, standard socks (not tested in Phase One), compression stockings and bare feet.[166] Using the same flooring surface as that used for the pendulum test, the subjects stood on the ramp at various degrees of incline until slippage occurred.[166] In Phase One of the testing, the compression stockings performed better than any of the non-slip socks.[166] Phase Two testing yielded different results, with all three subjects slipping at the lowest incline in compression socks, and standard socks slipping at the next lowest angles in all three subjects. Performance in the non-slip socks varied from similar to standard socks to significantly better, dependent on brand, foot size, and subject. The consistently best performance on the ramp was the condition of bare feet for all subjects.[166]

The results of the Wet Pendulum Test do not support the findings of the Meddaugh et al,[167] which reported a decrease in falls due to slipping in urine, as the non-slip socks did not perform well on the more objective test.[166] According to the result of Chari et al,[166] bare feet would provide the best protection against slipping falls, compared to non-slip socks, compression stockings and standard socks. Lord and Basher[168] also found bare feet to improve performance on walking and balance measures. Certainly, for foot protection and hygienic purposes, walking in bare feet would not be ideal. Chari et al[166] did not compare bare feet to other footwear, such as shoes or slippers. Menz et al[169] tested a variety of men's Oxford-type shoes and women's dress shoes under a variety of conditions to determine resistance to slippage. Under dry

conditions, Oxfords with a 10° bevel at the posterior heel performed best in the men's shoes; for the women's shoes, dress shoes with a wide heel with/without a textured bottom performed best.[169] Under wet, slippery conditions, none of the shoes performed well, therefore no recommendations could be made as to a "best" shoe to minimize slip-type falls.[169] Under some circumstances, the non-slip qualities may actually contribute to falls by creating too much friction to allow safe mobility.[116, 145]

"Ideal" footwear to reduce falls has not clearly been defined through experimental evidence, therefore no specific guidelines have been provided by the combined efforts of the American Geriatrics Society (AGS), British Geriatrics Society (BGS) and the American Academy of Orthopedic Surgeons (AAOS) Panel on Falls Prevention.[123] Although The Panel was unable to find support for shoes that specifically contributed to fall prevention, it noted that studies have shown that footwear could affect gait, functional reaching ability, as well as static and dynamic balance performance.[123] The Australian Falls Prevention Guidelines suggest that "safe" shoes should have the following characteristics: shoelaces or Velcro to secure the shoe; a beveled heel to prevent slipping, as well as one that is broad and flared to maximize stability and contact with the ground; a midsole that is firm and thin, allowing the wearer to "feel" the walking surface underneath; and the sole should be textured to prevent slipping; a heel collar (i.e., the portion encircling the foot/ankle) that is firm in order to provide stability,[52] as well as higher for further increased stability.[170] Conversely, "unsafe" shoes would have no method of securing them to the wearer (i.e., no laces, Velcro); a soft "upper" portion or heel collar; narrow, higher heels which decrease stability[52] and result in gait changes in older adults;[171] and a smooth or worn sole, which will not protect against slipping accidents.[52]

A strong association was found with fractures sustained during fall and wearing slip-on shoes (shoes not secured at the heel) or sandals,[164, 172] as well as shoes with narrow and/or higher heels,[164] i.e., heels that are greater than 2.5 cm.[173] Socks/slippers[164, 172] and shoes with spongy soles[164] were also associated with increased fractures with falls. Shoes with low heels, wide heels, and that "cover and stay on the foot in the event of a fall can reduce the risk of fractures" among individuals who fall.[164]

When compared to younger men, older men demonstrate approximately 200% greater error in foot position sense relative to the support surface under dynamic conditions.[174] Foot position sense and performance on balance tests improve with thinner, harder midsoles, and worsen with thicker, more compliant midsoles.[174-176] By these standards, typical athletic shoes and walking shoes could lead to greater instability.[175] However, shoes with thicker, softer midsoles are frequently perceived as more comfortable; shoes that have thin-hard midsoles that are "relatively comfortable" should be recommended.[175] A study by Kerse et al[165] of older adults in residential care in New Zealand, ranging from low level care (needing minimal assistance) to high level and dementia care found that wearing shoes resulted in significantly fewer injurious falls than wearing slippers. Interestingly, hard-soled shoes were no more protective of falls than soft-soled shoes.[165] These findings are similar to those of Lord et al,[170] who found no correlation between sole hardness and falls. The results of these two studies[165, 170] are counter to findings of other studies.[164-165, 172-173] Koepsell et al found that athletic shoes and canvas-type shoes ("sneakers," by their description) were associated with a decreased incidence of falls when compared to other types of shoes such as lace-up oxfords, loafers and other shoe types.[177] There are different possible explanations for this. The previously mentioned studies[174-176] were performed with specific stability tests on balance beams[174-175] or sway reference,[176] and there was

no indication of fall history or prospective study to determine if subjects fell, and if so, what shoes were worn at the time. While harder-soled shoes may impart greater stability in an experimental situation, there may be no carry-over into "real-life" situations.[178]

Another possibility for the results in the Kerse et al study[165] may be that the residents were mostly indoor on level surfaces. Community-dwelling older adults will need to negotiate on even and uneven surfaces, where the greater stability offered by thin, hard-soled shoes may be beneficial. In a residential setting, the level surface may provide the necessary stability. Furthermore, although hard-soled shoes may allow for improved position sense, they tend to be more slippery (i.e., a lower coefficient of friction) than soft-soled shoes,[179] which can result in slippage-type falls.[180] Due to the decreased friction, wearers perceived an increase in "slipperiness," resulting in automatic compensatory alterations in gait in those wearing hard-soled shoes compared to those wearing soft-soled shoes.[179] These gait alterations included decreased velocity, decreased stride length, decreased ankle dorsiflexion range of motion with initial contact, and decreased total body acceleration immediately prior to and following initial contact have been noted with hard sole shoes to prevent slipping.[179] Soft-soled shoes increased the time of older adult subjects to terminate gait after a command, when compared to other shoe conditions, and high ankle collar shoes decreased that time on wet surfaces.[181] Such alterations may contribute to increased falls, as well.[14, 53, 147, 182-183] Community-dwelling older adults reported falls that occurred with stockings or bare feet.[177] These results were echoed by Kelsey et al.[184] Approximately 52% of older adults who had reported falling in their home were in bare feet, socks or slippers.[184]

Although Koepsell et al[177] found that athletic shoes may be protective of falls, Frey and Kubasak[185] found that at least some older adults blame their athletic shoes for their falls,

however, for reasons different than described above. One hundred and six community-dwelling "seniors" who fell were interviewed about the circumstances of their falls. Twenty-eight percent cited their shoes as the primary problem, with complaints of "shoe drags/catches" cited by 43% of those individuals, and one individual reported that the shoe was "heavy and had no give."[185] Forty-two percent of all of the fallers were wearing "athletic shoes" at the time of their fall, and of those who blamed their shoes, 33% were wearing athletic shoes.[185]

Older women from an assisted living facilities and retirement facilities performed walking tests, the Timed Up and Go (TUG) and the 10-Meter Walk test (TMW) fastest in walking shoes (fastened with laces, Velcro or buckles and heel height of 0-2cm), slower in bare feet, and slowest in dress shoes (firm-soled slip-on shoes with a heel height $\geq$ 4cm).[186] In a reaching task, the Functional Reach (FR) test, the women performed significantly better in bare feet and walking shoes than in dress shoes.[186] Conversely, a group of 100 women (mean age 85) performed significantly better on the Berg Balance Scale with their usual shoes on than in bare feet, regardless of the shoe type.[152] Women in the study tended to be older, and while primarily community-dwelling, more mobility impaired (most used assistive devices), and had a history of at least one fall in the prior year, indicating a more severely impaired group of women tested compared to other studies with contrary results.[152] Other authors have found no significant correlation with falls inside or outside of the house and shoe type.[152] Although several fallers in the study did report their shoes as a factor in their fall, the total was not significant.[152] However, wearing no shoes, i.e., bare feet and wearing socks were correlated with a higher incidence of falls inside the home.[152]

Although specific shoes have not been shown to prevent falls,[123] ill-fitting shoes may contribute to increased risk of falls.[116, 187] Ill-fitting shoes were found to contribute to foot

pain[187] that is associated with falls,[146-147, 188-189] as well as foot ulcers and other foot deformities.[187, 190] One study identified that 98% of individuals in dementia or subacute units had foot deformities, 41% of whom required podiatric intervention, and 86% of those individuals had improper footwear.[191] Due to biomechanics and the anatomical structure of their feet (narrower foot overall, narrower heel compared to forefoot, increased pronation and narrower Achilles tendon), women's feet are likely to be at greater risk for injury.[192] Women tend to wear ill-fitting shoes that result in a variety of foot deformities and pain[192] related to increased risk of falls.[146-147, 187-190] Specially-adapted shoes, such as "rocker bottom"[193] or "off-loading"[194] shoes, used as an intervention reduce pressure on the metatarsal heads in the cases of peripheral neuropathy, forefoot deformity or ulceration can also create imbalance.[193-194] Other shoe adaptations have demonstrated improvement in tests of balance,[195-196] complaints of pain,[195] and falls.[196]

In summary, studies related to the use of footwear and falling are conflicting. Some suggest that barefoot is protective; others suggest that barefoot increases the risk of falling; and some studies suggest that hard soles are optimal, while others softer soles are safer. Some commonalities do exist, however. As described by the Best Practice Guidelines for Australian Hospitals and Residential Aged Care Residential Facilities,[52] shoes that fasten, have an enclosed heel cup, and a non-slip tread seem to be the best. The exact type and hardness of sole is debatable, and appears to be somewhat dependent on the type of walking an individual will most likely be doing. Since individuals in ALFs tend to be more frail and mobility-impaired, most will be walking primarily indoors. Also, given the likely frailty and impaired mobility, "running" shoes with greater weight and knobby treads may increase the likelihood of tripping incidents.[185] "Walking" shoes have non-slip soles but are not knobby and they tend to weigh

less, consistent with recommendations of Frey,[185] and thus may be better for individuals residing in ALFs. All shoes should fit properly to provide maximum support and comfort.

2.3.2.8 Falls in Long Term Care

The rate of older adults in residential care settings who fell at least once over the course of a year was approximately 57%,[149] compared to the generally accepted 30% of all adults 65 and over.[37, 48, 78] Residential care settings including senior citizens' apartments, as well as "old people's homes," and group homes for individuals with dementia were included in the 57% rate.[149] Given that older adults in the senior citizen's apartments, in which the inhabitants may live independently with access to assistance as needed were included, this differs somewhat from the population typical of residential care in the United States (US), and therefore may under-represent falls in US residential settings. In 2001, the American Geriatrics Society reported that the incidence of falls for institutionalized elderly in the US is about three times that of community-dwelling older adults.[123] Injury rates and hospitalizations for fall-related injuries are much higher with institutionalized older adults compared to community-dwelling older adults (10-25% versus about 5%).[123]

2.3.2.9 Cost of Falls in Older Adults

Falls in older adults result in increased medical costs compared to older adults without falls.[197] In a cohort of 1,017 older adults whose intake data were collected from 1989-1990, medical costs were tracked for a period of one year.[197] Those who fell were tracked for a full year after the date of their first fall.[197] All were community-dwelling, able to ambulate in their own home, and follow commands. When compared to those who did not fall, "fallers" incurred an

additional $998 in hospital costs for non-injurious falls (total costs $2,500), increasing to $4,175 in hospital costs and $11,900 overall for more than one non-injurious fall.[197] Injurious falls resulted in an increase of $11,042 in hospital costs, and $19,440 overall.[197] All costs were converted to 1996 dollars, and did not include trips to physicians' offices, as that could not be tracked consistently, however, nursing home costs post-fall are included.[197]

Roudsari et al[198] found that, in 2004 US dollars, of 550 falls, the mean hospitalization cost for an older adult with a fall-related injury was $17,483 (S.D.: $22,426). The mean ED cost was $236 (S.D.: $388). The mean cost for an outpatient visit (physician's office or hospital-based outpatient clinic) was $412 (S.D.: $1126).[198] The most expensive type of injury was found to be a femoral fracture, with a mean cost of $18,638 (S.D.: $19,990).[198] This study did not compare costs to "non-fallers," and the authors utilized the MarketScan® database, therefore the fallers' dispositions (community-dwelling, nursing home, assisted living) prior to the fall incident was not considered, so it is likely that the sample came from individuals from various settings. Only the acute care cost per incident was determined.[198]

According to the CDC Fact Sheet related to the Cost of Falls Among Older Adults,[199] of the 2.2 million older adults treated in the ED in 2009 for non-fatal injuries sustained due to a fall, over 582,000 required hospitalization. Fall-related injuries account for five times the number of hospitalizations of older adults than hospitalizations due to injuries from other causes.[199] Generally, studies describing the costs related to falls are describing direct costs; i.e., medical costs directly related to post-fall care: ED visits, doctors' visits, hospitalizations, medications, adaptive or assistive equipment, home modifications, or insurance fees.[199] Indirect costs can be more difficult to quantify, but are important to consider as well. These tend to be longer term, and include, but are not limited to, increased disability, time lost from work, dependence on

others, diminished quality of life, and increased difficulty with household chores.[199] It is estimated (using 2007 dollars) that by the year 2020, combined direct and indirect costs resulting from fall-related injuries in older adults will reach $54.9 billion dollars yearly.[199] So, although presently the cost of care for older adults who sustain fall-related injuries is high,[198] it is expected to continue to grow in the future[199] as the population of older adults continues to grow.[200-203]

2.3.2.10   Summary

Older adults are a growing population in this country and alternative living arrangements require further exploration. One alternative is assisted living facilities. An ALF can provide supervision and support to varying degrees at a lower cost than nursing homes in a less restrictive environment. ALF's vary greatly in the types of consumers they service, the types of services they offer, and even the type of living environment. They also vary in name from state to state, sometimes based on their services and population, and sometimes there is no specific reason for how they are named. In addition to the term "assisted living facility," names such as personal care home, residential care or long term care facilities, among others, may be used.

Because ALF's are private pay (i.e., paid for by the residents' own funds), they do not have the federal regulations applied to them that nursing homes, which receive federal (Medicare) funding have. It is up to each state to regulate ALF's, and regulations vary greatly from state to state. In general, there is no specific training required by most ALF caregivers. In order to encourage quality care for residents of ALF's, the American Geriatrics Society published a position statement identifying areas that the Society determined to be crucial to the care of older adults. One such area is identifying fall risk and fall prevention.

Falls are a significant cause of disability and death in older adults. Women tend to have more injurious falls than men. Risk of falls tends to increase with age, and there are a variety of

factors, both intrinsic (related to the older adult) and extrinsic (related to the environment) that can further increase an individual's fall risk. Falls result in considerable cost: direct costs in the form of medical costs and indirect costs in the form of cost to the individual and his/her way of life and quality of life. Falls can have a further debilitating effect by creating a fear of falling, which frequently results in older adults limiting their activity and isolating themselves socially. Older adults in long term care are more likely to fall and more likely to sustain a serious injury compared to their community-dwelling counterparts. Because both individual and environmental issues can contribute to falls, it would be beneficial to educate not only the direct care staff, but all staff, including maintenance, housekeeping, and even kitchen staff about fall risk factors and interventions. In this way, all staff would become aware of potential situations that could to contribute to a fall. In some ALF's, there is no division of duties, so educating all the direct care staff might assist in falls prevention.

2.4   EDUCATION FOR STAFF IN ASSISTED LIVING

2.4.1   Educational Theories

There are numerous theoretical approaches to teaching groups. One such approach is "constructivism."[204-211] This approach focuses on how students "construct" understanding, utilizing their prior knowledge and experiences.[204] Using this approach, the learners' prior knowledge and experiences are organized into their own "schema, patterns, and connections for understanding and remembering."[204] This is an active process on the part of the learner, with individual knowledge and experience affecting the learner's creation, interpretation and

36

reorganization of knowledge into meaningful information specific to that learner.[207-208] Essential to applying constructivism is, through a carefully constructed curriculum, providing the learners with the opportunities to "connect their prior knowledge and experiences through their own thought processes and through interactions with others and the environment."[204] The idea behind this approach is to allow knowledge and skills to build gradually, "scaffolding" on one another, thus providing the learners with a deeper understanding than rote memorization.[204] With proper application, computer technology and the Internet can be used to very effectively to apply this approach for certain learning activities.[205-206, 209] One of constructivism's strengths is that it appears to help students develop the ability to problem-solve,[209, 212] as well as enhance creativity, improve motivation, and develop the ability to work in a team.[209] Students' appear to have positive responses to this type of teaching method.[209-210] Based on a review of literature related to the constructivist theory, this technique appears to be best used with the learners working in groups or alongside each other with the ability to interact, and with a larger content area (as in a whole course, or large segments of a course), such that earlier-learned concepts may serve as building blocks for newer concepts.[204-209, 212] Furthermore, the experiences each learner brings to the activity contribute to that learner's attainment of knowledge, skills and understanding.[204-209, 212]

A theoretical approach to learning that is very similar, but perhaps more refined, than constructivism is scaffolded learning[213-214] and problem-based or inquiry learning.[213, 215] Constructivism learning may be loosely structured or designed very specifically.[213] Problem-based and inquiry learning are highly structured around finding the answers to specific problems or questions.[208, 213, 215-218] All result in what may be considered scaffolded learning, as new knowledge and skills are built on prior knowledge and experiences.[213-219] Case-based learning is

very similar as well, in that the learners are presented with specific cases to research and solve.[220-223] As with constructivism, technology may enhance learning with this approach.[215, 217, 219, 223-225] Given that the approach of problem-based/inquiry learning is very similar to that as described for constructivism, the same problems would arise if using this technique to train ALF staff.

Another educational theory is the "discovery-learning" approach.[211, 226-227] With this approach, the faculty or teachers provide tools and some direction, and the learners are to discover the information on their own.[211, 226-227] Discovery learning generally requires the learner know something about the topic, however carefully designed laboratory activities may be able to help the learner ascertain even basic knowledge.[211, 226-227] As with constructivism, technology and computer programs can be used to facilitate discovery learning.[211, 226-227] Given the time involved to "discover" the necessary information, as well as some prior knowledge, this technique would most likely not be a successful or efficient approach for staff training in ALFs in order to learn information in a timely fashion

Situated learning is a teaching technique in which the educator creates a situation or situations for the learner to respond to and problem-solve the solution.[228-229] Woolf and Quinn[228] found that learners had variable responses to this technique, apparently dependent on how vested the learners were in the content. In other words, the learners placed high value on content that they felt would help them provide something valuable to their clients; they placed medium value on content that they felt would provide sufficient (but not high) value to their clients; and for content they did not perceive as valuable, they gave minimal effort in completion, but at least tried to find something meaningful to themselves.[228] As with constructivism, situated learning

does allow for a deeper understanding and ability to problem-solve through content presented and practiced.[229] This approach can be supplemented or taught through the use of technology.[230]

Experiential learning is a type of inquiry based learning, in which the learners are immersed in an activity around a specific type of inquiry or question.[231] Experiential learning can be applied to a variety of topics[231] such as gardens or bread-baking,[231] or to a broader issue such as environmentalism.[232] Students have been found to remain engaged while learning[231-232] and have been shown to perform better on a variety of areas tested, above and beyond those simply based on the topic,[231] improving higher order cognitive skills.[231] Experiential learning techniques can be used for broad or narrow topics in variety of ways. The goal is to have the learners actively participating in a task or activity, in order to have them better engaged and process information. Active learning might be adapted quite well to a variety of staff training areas in ALFs.

The above approaches vary somewhat from typical educator-centered approaches, in which the educator lectures and the learners listen, take notes, and read from textbooks.[204] The typical format of educating, while very appropriate for some topics and parts of a curriculum, tends to be less effective than approaches which engage the learner more actively.[204-210, 212, 231-232] In some cases, the groundwork may be laid for some of the above approaches by providing the basic information that enables the learners to then proceed to a constructivist or problem-centered approach.[204] As a general technique, however, the traditional teacher-centered approach has been found to be less effective than some of the other approaches in that students are less engaged, they tend to memorize rote material and then forget it after the examination, and the students tend to be less engaged.[204-210, 212, 231-232]

The experiential teaching approach appears to be the best choice for staff training on fall risk and prevention in ALFs. Whereas other alternatives to the teacher-centered approach require the learner to rely on past experiences and build on prior knowledge, this approach can be used for discreet topics without necessary prior knowledge of the content. Furthermore, scaffolding, discovery learning and other similar approaches require an extended period of time, meant to be applied in a classroom to cover a particular unit or segment of a curriculum. Given that this program is providing novel information to the staff at ALFs, and must be done in a limited period of time, the other alternatives to the teacher-centered approach are not feasible. By engaging the approach learners via the experiential to teaching, evidence indicates that they will internalize the information more effectively than with the teacher-centered approach, and ideally staff will incorporate the concepts into the care of their residents.

2.4.2   Reading level

As previously described, the direct caregivers, that is, the ones involved in direct, hands-on care of the residents, in assisted living are only required in some states to have a high school degree or equivalent.[22, 31-32, 34, 233] In other states, not even that is required.[22, 31-32, 34, 233] Also, in some states, speaking English is not a requirement to be a direct caregiver.[22, 31-32, 34, 233] "Low level learners" is defined by one author as individuals reading at a fourth grade reading level or below,[234] however there is no universally accepted definition, nor is there a defined etiology for the lack of literacy when referring to low level learners. Articles referring to low level learners, while using the same term, vary in descriptions from individuals learning English as a Second Language (ESL),[234-241] educational settings and limitations,[236, 241-243] or possible comprehension limitations.[234, 236, 240-242, 244] Given that caregivers may or may not have a high school education,

and may not have English as a first language, then an educational program and any written information should be created with that in mind.

The United States Department of Education, through the National Assessment of Adult Literature (NAAL), does not describe literacy according to grade level, as the NAAL's approach of assessing adult literacy differs somewhat from assessments in classrooms.[245] The NAAL testing requires the participants to read and apply what they read in a written response, rather than multiple choice questions used to determine reading level.[245] According to the NAAL, this type of testing, along with descriptive levels of literacy instead of a grade equivalency, provides a more thorough picture of functional adult literacy in this country.[245] The test the NAAL has created is out of 500 possible points, and is divided into three areas of literacy[245-247]: prose, document and quantitative.[246-247] Prose literacy refers to the skills necessary to comprehend and use continuous written language, such as newspapers or instructional brochures.[246-247] Document literacy is considered the knowledge and skills to use maps, fill out forms, read food and medication labels, and other forms of discontinuous writing.[246-247] Finally, quantitative literacy refers to skills and understanding text that includes numbers and computations, such as balancing a checkbook, filling out order forms or understanding a bill or invoice.[246-248] These tests were administered in 1992[247] and again in 2003.[245-246] With the 2003 data, the performance descriptors of Below Basic, Basic, Intermediate and Proficient were developed and applied to participants' scores.[248] The 1992 data have since been re-analyzed according to criteria determined for the 2003 terminology, so that the data sets could be compared.[245, 248] Score ranges and definitions for each performance level can be found in Table 4.[248-249] In 2003, participants who reported not having completed high school (HS) scored on average low Basic or Below Basic literacy level.[248] Participants who reported being HS graduates scored on average a

low Intermediate or Basic level of literacy, as did those who had passed the General Educational Development (GED) exam or a high school equivalency exam.[248] In each case, performance was worst on Prose literacy, slightly better on Quantitative literacy, and best (although only slightly so) on Document literacy (see Table 5).[248] According to these results, the typical direct care provided in an ALF is not proficient at any of these 3 types of functional literacy, and are primarily functioning at a Basic level.

Table 4. NAAL scoring[248-249]

DESCRIPTOR	SCORE RANGE	DEFINITION
BELOW BASIC	Prose: 0-209 Document: 0-204 Quantitative: 0-234	"No more than the most simple and concrete literacy skills."[249]
BASIC	Prose: 210-264 Document: 205-249 Quantitative: 235-289	"Skills necessary to perform simple and everyday literacy activities."[249]
INTERMEDIATE	Prose: 265-339 Document: 250-334 Quantitative: 290-349	"Skills necessary to perform moderately challenging literacy activities."[249]
PROFICIENT	Prose: 340-500 Document: 335-500 Quantitative: 350-500	"Skills necessary to perform more complex and challenging literacy activities."[249]

Table 5. Literacy performance level according to level of education[248]

TYPE OF LITERACY	SOME HIGH SCHOOL AVG. SCORE DESCRIPTION	GED/HIGH SCHOOL EQUIVALENCY AVG. SCORE DESCRIPTION	HIGH SCHOOL GRADUATE AVG. SCORE DESCRIPTION
PROSE	207 Below Basic	260 Basic	262 Basic
DOCUMENT	208 Basic (low)	257 Intermediate (low)	258 Intermediate (low)
QUANTITATIVE	211 Below Basic	265 Basic	269 Basic

Although descriptive terms provide helpful insight into functional literacy, for educational programs and test development, reading grade level can provide more insight, as various software programs help to identify grade level of written information to be presented. Individuals who have passed the GED are expected to have a minimum of a ninth grade reading level, although passing criteria are determined by each state.[250] Both high school graduates and those who passed the GED have similar levels of literacy.[251] According to the 1992 National Adult Literacy Survey (currently out-of-print), the majority of adults read at a level between eighth and ninth grade level, while 21-23% read at a fifth grade level or lower.[252-253] A 2000 U.S. Department of education report indicates that the average adult in the country is at an 8th grade level of functional literacy.[254] Another study found >63% of adults functioning at 7th-8th grade or lower (with 14% functionally illiterate).[255] These results were supported in a study by Davis et al, with 73% reading at less than a 9th grade level, 55% at less than a 7th grade level, and 31% below a 4th grade level, despite the participants having an average of >11 grade education.[256] Another study found that 42% of patients presenting to a rheumatology clinic had an 8th grade reading level or less, including patients who reported having completed twelve years of school.[257] Of 1400 veterans assessed in another study, over 39% were found to read at a 7th or 8th grade level or less.[258] Although the statistics vary somewhat study to study, it is clear that a significant portion of the population, some despite having a high school diploma or equivalent, continue to have difficulty reading. In addition, health literacy is generally even more limited.[252-255] This information, along with studies indicating that learners who are actively involved in the education process, such as with Experiential Learning, suggest that written educational information for adults may be of limited benefit, especially for education or training on health-related issues. Furthermore, any written materials to be used, for educational or testing purposes,

would best be understood by the majority of the population if written no higher than a sixth grade level.

2.4.3 Cognitive interviewing

To make things more understandable, both in written and spoken educational information, it can be beneficial to substitute some words for others that are more commonly used. In fact, because of the low literacy rate of adults and even lower health literacy rates, the federal government established regulations that government documents, including those related to healthcare, must be in "plain language."[259] The Office of Disease Prevention and Health Promotion developed a webpage to provide suggestions for improving transmission of health-related information, providing suggestions for language for oral, written and electronic communication.[260] Simply changing some words often used by healthcare professionals to words that are more commonly used in conversation can significantly improve the understanding of the recipient/learner.[253] Using words or phrases such as "what you eat" instead of "diet," or "make sure" instead of "ensure" can facilitate communication.[253]   Given the limited level of education of ALF caregivers, as well as the typical level of health literacy of Americans, it seems prudent to utilize common terminology for both the presentation of an educational program for ALF caregivers, as well as any pre-tests and post-tests typically administered after such programming. Since healthcare professionals are often the ones developing educational programs for ALF staff, they may benefit from assistance with using more common, less technical language. An approach referred to "Cognitive Interviewing" may be helpful.[261]

Cognitive interviewing is an approach that enables designers of oral materials, questionnaires and other written material to refine the materials to best fit the audience.[261] This

is accomplished by separately interviewing a small sample of individuals similar to those for whom the material is intended. The interviewer can then ask very specific questions related to wording and descriptions included in the material, learning what the wording means to the recipient of the information, and his/her reactions to questions to be used.[261] In this way, the interviewer can revise questions and content to be more meaningful to the recipients.[261] Such a process will enable content and test questions to be more appropriate for the audience, and potentially help bridge the literacy gap between healthcare professionals and those with whom the professionals interact. This process can be especially helpful for developing educational presentations and pre/post-tests for caregivers in various institutional settings, including ALFs.

In response to a federal initiative to determine quality of life and care (QOL and QOC) of nursing home (NH) residents, a group of researchers[262] gathered to develop a tool that could be easily understood and answered by residents of NH. The initiative was to develop a version of The Consumer Assessment of Healthcare Providers and Systems (CAHPS®) survey that could be used with the residents of NH (the NHCAHPS) to assess their QOL and QOC within their NH experience .[262] The approach of the cognitive interview, sometimes also know as cognitive testing, was used to develop the original CAHPS®,[263] as well as to evaluate it and make suggestions for revisions.[264] In the development of the NHCAHPS, cognitive interviewing was used with resident focus groups over several stages to help refine the survey in a variety of issues: language, question type, response type, and time frames over which residents could best estimate their responses (i.e., rather than "over the last week," residents were better able to respond to "how are things going now").[262] A similar approach using feedback from focus groups was used to design computer-based education modules for families of NH residents.[265] In healthcare, this approach has been utilized to inform the development of educational programs,

questionnaires and tests in such areas as: a questionnaire to assess job satisfactions of certified nursing assistants (CNA) in nursing homes,[266] to help develop appropriate test items for computer adaptive test for children with cerebral palsy,[267] develop a survey of CNAs in NH to help identify the level of elder abuse in NH,[268] among others.

2.4.4   Training of Certified Nursing Assistants

Although there are no specific guidelines or expectations of training ALF staff, their counterpart in NH are certified nursing assistants, who, as their title suggests, are required to complete a training program and a certification exam prior to employment. The same is true for Home Health Aides (HHA).[269] In the state of Pennsylvania, a "Nurse Aide" is legally defined as:

> An individual who provides nursing or nursing related
> services to residents in a facility. The term does not
> include an individual who is a licensed health professional or
> volunteers to provide such services without monetary
> compensation.[270]

 HHA/CNAs responsibilities include providing assistance with activities of daily living (ADLs), making beds, assessing vital signs, responding to call buttons (resident notification of need for assistance from room), transporting residents, and a variety of other activities as designated by their specific facility's job descriptions.[269, 271] The certification exam is a national exam, known as the National Nurse Aide Assessment Program (NNAP), and involve both a written and a skills test.[272] Sample questions for the written portion of the NNAP exam can be found in Appendix B.[273] Federal regulations state that a certification program must provide a minimum of 75 hours of classroom and clinical training.[269] Each state, however, determines its own requirements

above and beyond those federally regulated.[269] In the state of Pennsylvania, schools vary in the amount of didactical and clinical training, many upwards of 200 hours.[274] As of January, 2011, Pennsylvania requires a minimum of 80 hours total of training, 37.5 of which must be "supervised practical training" in order to be eligible to sit for the exam.[275] Candidates for CNA in Pennsylvania need only to be at least 16 years of age, a high school diploma or equivalent is not necessary,[275] while other states may require the high school graduation or equivalent.[276] The course cover such areas as provision of physical care and assistance, psychosocial issues, basic nursing-related skills (e.g., infection control, safety, among other things), and the role of the nurse aide.[275] Although their roles are highly similar, CNAs are much better trained for their job duties and interactions with residents than are staff in ALFs. Other than the more specific job-related training and certification of CNAs, many similarities exist between the pre-requisite educational requirements and job responsibilities of CNA/HHA and ALF caregiving staff. Since both groups at best are to have completed high school or an equivalency exam, and in some states, not even that basic education, it is reasonable to expect that limitations in literacy and possibly learning may be present.

2.4.5   Summary of educational issues

The educational background of direct caregiving staff varies from one state to another. At best, some states require a high school diploma or equivalency exam, such as the GED; other states do not have even that minimum standard. High school graduates and GED graduates tend to perform similarly on literacy exams. While it is expected that at least a ninth grade reading level is necessary in order to pass the GED, studies indicate that a large percentage of the adult population (studies vary, some indicating just below 50% to others indicating > 60%) read at or

below an 8th grade level, with a large number below even a 6th grade literacy level. It is possible that some of these individuals would be classified as low-level learners. Training materials should be presented at an appropriate level for the learner, and testing materials should be no more than a 6th grade reading level. Experiential Learning is a technique that encourages learner participation, and has been found to be more effective than strict teacher-centered approach. Given that reading is not strictly stressed as part of the Experiential Learning theory, and because this technique can be used for a single educational session, this appears to be an excellent choice for presenting information to ALF staff.

For development of the pre-test and post-test, sample questions from the NNAP test for CNA/HHA may be helpful to provide a format for question writing. Furthermore, test writing literature and guides, such as "Educational Assessment of Students, 5th ed.",[277] can provide guidance in structuring questions properly with literacy capabilities in mind. Once an educational program and testing is decided upon and developed, the process of cognitive interviewing can be used with a small focus group to further refine language of each to common usage language, thus making the content and wording more specific to the population of learners. Lastly, a number of software programs exist to assess the reading level at which the document is written. Any further revisions to improve readability can be made based on the software analysis. Employing the variety of techniques as described should lead to an educational program and testing suitable for caregivers in ALFs.

2.5   OVERVIEW SUMMARY

As a group, the population of the United States is aging. People are living longer, and a large number of adults born post-World War II, known as The Baby Boomers, are beginning to reach older adulthood. As a result, a variety of living arrangements to accommodate the spectrum of needs of the aging population are growing. One such option is the assisted living facility. An assisted living facility helps to bridge the gap between someone who can no longer live independently, but who does not require the services of nursing home care. Assisted living facilities have minimal federal regulation, and are primarily regulated by each state individually. As a result, the level of training for caregiving staff varies greatly, generally with minimal requirements.

Falls are a significant health problem for older adults, resulting in disability and even death. Older adults residing in ALFs tend to have more risk factors for falls than those residing in the community. Staff in ALFs currently are not necessarily trained to understand and recognize risk factors for falls, and thus are likely inadequately prepared to intervene when a resident presents with an increased likelihood of falling. These risk factors may be related to the resident (intrinsic) or the environment (extrinsic).   Because of the lack of required formal training, and because of the potential for devastating results due to falls in older adults, the American Geriatrics Society has put forth a position statement recommending areas of training that should be provided to ALF staff, specifying falls prevention as an area to be addressed.

The aims of this study are to develop and evaluate a training program for ALF staff that will enhance their abilities to best protect their residents from the likelihood of falling. While there is much literature on general fall risks and intervention/educational programs, there may be facility, resident or staff specific issues that contribute to or help protect residents in ALFs that

49

has not been addressed in the literature. Observing staff and residents on various shifts helped to identify such issues, enabling the educational program to be directed towards ALF-specific needs.

With the limited educational requirements for ALF staff (high school or equivalent in Pennsylvania, less in some other states), and armed with the knowledge of literacy research, it is expected that the literacy level of this audience will be low, or at least for a number of individuals who participate. This needs to be considered with both the language of the presentation, as well as in written materials. Experiential Learning is a technique which engages the learner actively, can be used for a single unit or educational session, and has been shown to have better learning outcomes than a teacher-centered approach, which is primarily lecture with supplemental notes. Because of the limited literacy level anticipated with these learners, this technique for presenting the information regarding falls risk and falls prevention appears to be a good approach. Literacy will also need to be considered with test development.

Literature reviews and the above observations, as well as consensus of the researchers, each of whom has related expertise in falls in older adults and/or training of staff in LTC and test development, will inform the content to be included as the educational program is developed. Techniques of cognitive interviewing and software to analyze reading level assist the researchers in further refining both the program and the test for suitability of the target audience. It is important to keep in mind both the literacy level, as well as "common language" used by staff in ALFs to make the program meaningful, and to enable accurate testing to determine learning of the audience.

3.0   DEVELOPMENT OF EDUCATIONAL PROGRAM

Multiple steps were taken in the development of the educational program and the corresponding pre-tests and post-tests. These were done through a series of preliminary studies. .

3.1   OBSERVATIONS AT ASSISTED LIVING FACILITIES/PERSONAL CARE HOMES

A small, preliminary study was done using two local PCHs in order to identify issues that may occur in ALFs/PCHs that may contribute to increased fall risk. The primary researcher observed 2 PCHs over all three shifts. Both were samples of convenience, known to the primary researcher, and which were chosen, in part, based on their willingness to participate.

3.1.1   Methods

Each PCH was observed on each shift (different days) and a recording of various incidents and observations was made on a tally sheet (see Appendix A). In addition, the administrator completed a questionnaire in order to garner more in depth information about the PCH and how its needs for training could best be met (see Appendix A). The questionnaire addressed a number of issues, including (but not limited to) length of time of inservice, preferred time of day

for staff training, education and background of the PCH administrators, staff characteristics/knowledge of falls, and any other concerns or interests the administrators may be helpful in setting up a training program. An interview was planned with each administrator for additional input that might have been helpful (Appendix A).

The observations, as well as a review of the literature, provided the basis for the next step in the development of the educational program: a Delphi Method survey.

3.1.2 Analysis of Observations

The data were analyzed utilizing both qualitative and quantitative techniques. The responses from the interviews/questionnaires with the administrators were reviewed, and comments or observations that occurred in both interviews/questionnaires were noted in the development of the educational program. Individual responses were reviewed as well, and were considered for the educational program if they seemed pertinent based on the literature and the primary researcher's knowledge and expertise. The interviews were also reviewed for information for structuring of the presentation (length of time, suggestions for successful engagement of staff).

The counts of incidents related to potential fall risk that were observed by the primary researcher at each PCH were combined and tallied. Based on the frequency and type of incidents observed, these data were considered, along with other information acquired when developing the test and presentation.

3.1.3 Results

Frequency counts of the various incidents observed, along with descriptions of incidents or items that did not fully fit the operational definitions can be found in Appendix A, along with analyses providing a total count of each facility and the two facilities combined. Although some minor differences existed between the two facilities, there were a number of overlaps of conditions that could contribute to increased risk of falls among the residents. The issues fell into three general areas: environment-related, resident-related and staff-related. Environmental issues included dim lighting, cluttered common areas and resident rooms, obstacles left by both staff and residents, halls lacking handrails, loose or absence of grab-bars in bathroom areas, wet spots left on floors, and hanging/misshapen furniture cushions.

Issues related to the residents that were observed were, by the nature of observation, primarily extrinsic. Certainly, based on the ages (almost solely older adults) of the residents and their need for care, it would be a reasonable expectation that multiple intrinsic factors would be present as well. Resident-related issues observed included unsafe footwear, clothing that was too long and/or improperly fitting, inadequate and/or improper use of an assistive device, non-compliance with oxygen use (one resident at one facility, but consistent throughout multiple observations), incontinence and agitation/restless wandering. Although agitation and incontinence are intrinsic contributors to falls, they were observable by the residents' behavior and clothing.

Staff-related issues were similar at both locations. In both locations, staff were unavailable at times. At one location, the PI observed what appeared to be a petit mal seizure (based on observation and subsequent report of previous seizures). The PI did intervene for the safety of the resident, stabilizing the resident in her chair, and trying to rouse her. The staff

member returned a few minutes later, as the resident was beginning to become more alert. In both locations, staff were unavailable at times when residents were wandering unsafely in the halls (primarily on 3-11 and 11-7 shifts). Again, although the PI attempted to remain an uninvolved observer, the PI did intervene by obtaining the resident's assistive device, walking alongside the resident (without touching the resident), encouraging the resident to hold onto wall railing, or encouraging the resident to sit down. The PI then searched for staff. In some cases, staff were assisting other residents, sometimes smoking, and on one occasion, sleeping. On that particular occasion, the staff member fell asleep at the nurse's station, but was easily aroused by the PI to intervene with a resident. At the other facility, one staff member fell asleep, however she was not on duty at the time. The PI woke her when a resident fell, and the other person on duty was unable to be located quickly. When guarding residents during walking, staff often used poor technique, such as holding residents by an arm. In two cases, staff were noted to "guard" a resident during gait by walking backwards in front of the resident's wheeled walker and pulling on the walker in such a way to move the walker forward, thus pulling the resident forward, all the while pulling the walker too far in front of the resident for it to be a safe and effective assistive device. Staff were also observed yelling at residents at both facilities, primarily residents with dementia who were not doing as asked or instructed. This increased agitation on the part of the resident.

3.1.4 Discussion/Limitations

The observations yielded some valuable information, especially regarding some of the resident issues. It was very common for the residents to wear unsafe footwear, and ill-fitting clothing that created a safety hazard for the individual. Clothing (pants, pajama bottoms, robes) dragged on

the floor, creating tripping hazards. Often times, pants and pajama bottoms hung too low to allow safe gait. Furthermore, while environmental issues such as poor lighting, spills, clutter and so forth are cited in the literature as contributing factors to falls, it was noted that these issues were problems in both locations, highlighting the need to address such factors in the educational program. Some staff behaviors that are not always observed during patient care visits were also identified.

There were a number of limitations of this part of the study. Because safety of older adults was an issue, it was very difficult at times for the PI to remain a neutral observer. While the PI tried not to get involved, there were times when the safety of a resident took precedence over the role of observer. The PI twice notified staff of resident falls that would have likely gone undiscovered for quite some time, as the staff were doing other things at the time of the falls. Staff behaviors may have been affected by the presence of the observer. It is difficult to determine if staff behaved differently than if they were not being observed. At one facility in particular, the 3-11 and 11-7 staff both voiced concern that the PI was "spying" for the facility owners, despite reassurances otherwise. They did seem to relax after time, however there is no way to determine if their behavior would have been different if they were unaware of being observed.

The topography of both facilities made comprehensive observations difficult. One facility was two stories, however on each floor, both hallways and the common area were fairly easily viewable at one time, with only a slight change in position to view one hallway versus the other. For each shift, the PI observed one floor for approximately half the shift, and then moved to the other floor. On the "daylight" shift, i.e., 7-3 shift, due to the increased activity, the observer changed floors approximately every hour. The other facility had three main hallways, two

common areas at opposite ends and on opposite sides of the building, bathrooms that were not easily visible from any vantage point, and the common dining room was remote, visible only when one was directly in the dining room. The observer attempted to view as much as possible by moving around the facility during each visit, splitting time between the two common areas, walking past the common bathrooms frequently, and positioning self outside of the dining room during meal times and activities. Nonetheless, the PI was only able to view portions of each facility at any given time, therefore incident counts are likely somewhat low.

Descriptive characteristics (Appendix A) of the two facilities showed a number of similarities. Both are privately owned. Although their sizes differ (one with 75 beds, the other with 42 beds), their male to female ratio for residents is almost exactly the same, with the larger of the two 65% female, and the smaller 66% female. Similarly, the direct caregiving staff are predominantly female, with only three of 15 caregivers male in the larger home, and no male caregivers in the smaller home. Both facilities utilize the common 7-3, 3-11, 11-7 staffing schedule, although they differ slightly in how they schedule caregivers. For the larger of the two, the number of caregivers is based on the census, with 3-4 caregivers for the earlier shifts, and 2-3 for the overnight shift. The smaller facility schedules two per shift. For both, a minimum of a high school education or equivalent is mandatory to work at either location (consistent with the Pennsylvania state regulations). Each has mandatory training for staff throughout the year (also consistent with Pennsylvania state regulations). The larger of the two requires 24 hours of training or "inservicing" per year on "relevant issues," while the smaller requires 12 hours. As required by state law, both have mandatory training on diabetic care, with the larger of the two ensuring that some of its staff are certified medication aides and certified in diabetic care. All staff must be trained in first aid and cardiopulmonary resuscitation (state regulation). Staff in

both facilities are required to be awake and "on the floor" 24 hours a day – no sleeping permitted. In the larger facility, a registered nurse is in-house during weekdays, and on call 24 hours a day, while the other has no registered nurse at all (nurses are not required for PCHs in Pennsylvania). In the smaller facility, the caregiving staff also function as the housekeeping and kitchen staff (with a total of ten employees, all of whom are caregivers). The larger facility utilizes different staff for various positions, with caregivers making up one half (10) of the full complement of staff (20). The responses of the administrators of each of the facilities can be found in Appendix A.

The information from the administrators provided some context for the data collected during the observations. Although the smaller of the two facilities (PCH 2) has about 56% the number of beds as the larger, it had twice the number of falls per 3-month period (PCH 1 reported 3 falls, while PCH 2 reported 6 falls during a 3-month period) based on the information provided by the administrators. A fall and several near-falls occurred at PCH 2 during the observations by the primary researcher. When reviewing the data, PCH 2 had more incidents than the larger facility (some relative, based on the size of the two PCHs, and some in absolute terms). See Appendix A for comparisons. With an average census of 35 residents, observations revealed nearly as many of certain incidents in PCH 2 as were observed in PCH 1 with an average census of 58 residents. For example, both facilities were observed having nearly the same number of issues related to improper use of assistive devices (PCH 1 had 33 incidents in this area, or .58/resident; PCH 2 had 32 incidents in this area, or .91/resident) and the same number of incidences (2 each) of observed incontinence, despite the size difference (.03/resident in PCH 1 vs. .06 episodes/resident in PCH 2). When adjusted for size, PCH 2 was higher on 11 out of 17 areas related to increased fall risk that were monitored during the observation periods.

When all incidents were tallied up, there were 157 observed in PCH 1, or 2.62 incidents/resident; 130 incidents, or 3.71/resident, were observed at PCH 2 (including 1 fall). On the questionnaire, the administrator noted that most falls were, in her opinion, due to medical issues, or due to resident non-compliance issues. These observations suggest that other factors likely contribute to the higher incidence in falls.

There were some limitations to the portion of the study related to the administrators. Although the intention was to have the administrators complete the form regarding the characteristics of each PCH, and then the PI to interview each administrator in person, the administrators had difficulty committing to a time for either an in-person interview or a phone interview. As a result, the interview questionnaire was left with each administrator to complete at her convenience, and then to leave for the PI to retrieve at another time. Due to the inability to schedule times to meet, the PI was unable to ask follow up questions or seek clarification on some of the responses. The information is limited specifically to how the administrator chose to respond, both on the form descriptive of the PCH, and with the intended interview questionnaire. Although each was very willing to participate at the outset, it was clear that both had difficulty with even a relatively small time commitment related to this study. When the PI met with each administrator to discuss participation, there were numerous interruptions by staff and by phone calls, residents stopping in and family members knocking on the administrator's door. Attempts to schedule times to meet for the interview were changed or cancelled, thus the decision to leave the forms with the administrators was made.

3.2   THE DELPHI METHOD OF SURVEYS

Content for the educational program was determined based on literature review, results of the ALF observations, and the opinions of professionals highly specialized and experienced in the field of geriatrics and falls. The opinions of these individuals were determined through the Delphi Method to determine consensus of opinion.

The Delphi method is a method of communication among individuals that is structured to be an efficient way of dealing with a complex problem.[278] Frequently, the participants are referred to as "experts" in the content area covered by the survey,[278-280] however others suggest that the word expert is unclear and difficult to define in some cases,[281] so other terms suggesting informed panelists or participant[279] may be more appropriate.

The Delphi method was developed by the Rand Corporation[282-283] in the late 1940's[283] to improve decision-making[282-283] and help formulate group judgments based on the premise that "Two heads are better than one,"[282] or the input of multiple people can be helpful when precise information or knowledge is not available. In the Delphi approach to decision-making, a series of surveys are sent to pre-determined participants to arrive at a consensus of opinions.[278-280, 282] Generally, the first round of the surveys consists of open-ended questions, then subsequent rounds utilize the answers from said questions to refine opinions and achieve consensus to a pre-determined degree.[278-280, 282]   The Delphi technique of group communication has three characteristics which can be very beneficial when attempting to minimize bias among the respondents.[282]   The first is anonymity.[282]   Responses are obtained through "formal questionnaires," thus avoiding the potential impact of more dominant personalities that may occur in meetings.[282] The second feature is "iteration and controlled feedback."[282]   Through analysis, the responses are refined and then "controlled" feedback on the responses (controlled

by the parameters of the ultimate goal of the process and/or researcher) is sent to the participants in the form of a second survey.[282] This process is repeated with multiple surveys, refinement and feedback until the desired level of consensus is met. In the final feature, "statistical group response," the final response is an apt combination of the group responses.[282] In addition to minimizing the effect of dominant personalities, the Delphi technique also limits tangential and unnecessary communications, as well as limiting the impact of potential pressure towards conforming with the group.[282] This approach is such that it can be used to determine budgetary usages, policy issues, educational concerns, social and scientific concepts.[278] Although the Delphi approach was originally developed by the Rand Corporation to draw out expert opinions on a variety of issues, as well as forecasting technological advances,[283] it has been used in research and in practice to determine professional curricular content,[284-287] identifying problems and solutions faced by a group of medical professionals,[288] developing a diagnostic protocol[289] or outcomes measures.[290] Even as early as the 1970's, it had been used by government agencies, academic institutions, businesses, the armed forces, among others, in this country, as well as in Europe and Asia.[283]

3.2.1 Methods: The Participants

The Delphi technique has a long history of use in healthcare,[284-291] so this approach was utilized to further refine the content of this educational program. A Delphi survey (see Appendix B) was sent via Zoomerang® survey service, to six physical therapists (PT), three board-certified geriatricians, five occupational therapists (OT) and six registered nurses (RN) for a total of 20 participants. In their review of literature related to the Delphi process, Hsu and Sanford[279] note

that as few as ten participants may be sufficient for achieving meaningful consensus when the participants are similar in background. Other health-related studies have used the Delphi technique with ten or fewer informed participants,[292-294] thus it was felt that this was a sufficient number to render a consensus on the items to be included in the educational program.

Initial participants were known to and recommended by members of the research team. . The PTs asked to participate had to fulfill certain requirements: Certified Geriatric Clinical Specialists (GCS), certified through the American Physical Therapy Association (APTA), have a minimum of seven years of experience,[295] and who have treated patients in ALFs. To become a GCS through the APTA, a PT must be licensed to practice in the United States (through a state-administered licensing examination), and have a minimum of 2000 hours of direct patient care with older adults over the 10 years prior to application for certification, 500 of which must be within the prior 3 years, and then must pass a certification examination developed by a panel of experts for the American Board of Physical Therapy Specialties (ABPTS).[296] Alternatively, PTs can apply to take the certification examination if they have completed an APTA-credentialed residency in their specialty area.[296] The participants of the Delphi survey were required to have a minimum of seven years of experience, as research has demonstrated that one characteristic that differentiates novices from experts in medical decision-making is a minimum of seven years of clinical experience.[295] The final requirement for the PT participants determined by the researchers was that each PT had experience treating patients in ALFs. Although the other requirements would have ensured that the therapists have understanding of fall-related issues for older adults, this final requirement was to ensure that the PTs had some understanding of the environment, the limitations and capabilities of ALFs and their staff.

Board-certified Geriatricians, another group chosen for this survey, are certified as family medicine practitioners by the America Board of Family Medicine, must have an unrestricted license to practice in the United States or Canada, and then must apply for and pass the Geriatric Medicine Examination.[297] In doing so, they receive a Certificate of Added Qualifications in Geriatric Medicine.[297] Doctors of Osteopathy can also receive a Certificate of Added Qualifications through a similar route through the American College of Osteopathic Internists.[298] For both specialties, PT Geriatric Clinical Specialists and Geriatricians, through each certifying body, ongoing requirements have been established for each professional to maintain his/her certification.[296-298]

Additional potential participants were identified in a variety of ways – contacting authors of manuscripts, professional organizations, local universities, and recommendations of individuals who were contacted. The OTs and the RNs were also required to have a minimum of seven years of experience working with older adults, expertise in the area of falls in older adults, and experience working in the ALF setting. Although no requirement was set for additional certification of either group, nearly all (8/11, or 72.7%) had advanced or additional certification related to geriatrics or assisted living facilities, or both (Appendix B). Ultimately, the participants were a sample of convenience – professionals who met the inclusionary criteria who agreed to participate in this survey, and potentially several rounds of the Delphi survey.

A description of the participants can be found in Appendix B. Of the 20 participants, 17 (85%) were female. They ranged in age from 41 years old to 69 years old (M: 49.85; SD=7.73). Seventeen (85%) of the participants had advanced degrees and certifications above and beyond those required for their professions. The number of years in their profession ranged from seven to 48 years (mean: 23.75; SD: 9.87), with ten to 38 years (mean: 21.4; SD=7.47) of experience

working with older adults. Although unclear from the wording of the question, the respondent

with 7 years in his/her chosen profession had ten years of experience working with older adults,

so it is likely that this individual was working with older adults in a different capacity prior to

completing the degree requirements for his/her profession.

3.2.2   Methods: Survey Development

As previously described, Delphi surveys typically begin with open-ended questions, however to

facilitate responses, to be consistent with the literature and the findings from the PCH

observations, the first survey provided a list of 32 items related to increased fall risks. For

organizational purposes, these were categorized as Environment, Mobility, Age-Related,

Resident-Related, and Staff-Related Issues. At the end of each section, each participant was

given the opportunity to add any additional risk factors that he/she felt were vital to the

educational program but were not included in the preceding list. Each item was to be rated on a

4-point scale, ranging from 1 ("This item should definitely not be included" in the educational

program) to 4 ("This item should definitely be included" in the educational program). A goal

consensus of 70% or more[289, 299] was sought for an item to be included in the program.

In addition to rating each item, the respondents were asked to rank the items in order of

most important to least important to include. It was thought ranking the items may provide

hierarchy of information that could be included in an educational program.

3.2.3 Results

The Zoomerang® report provided the percentage of responses for each of the items, which were ranked 1-4 (Appendix B). Items rating a 4 with a consensus of 70% or more were used for the educational program. Items rating a 3 ("This item is not necessary, but would enhance" an educational program) were considered for inclusion depending on time limitations. To determine which items rated predominantly 3 would be included, the percentage of responses rating 3 and 4 were combined, and those with the highest scores were included. It was estimated that 10 – 15 items would fit into a time frame appropriate for the staff, depending on the items and how much explanation each required. Consensus was reached on 15 items on the first round of the survey, thus there was no need for a second round.

The ranking of the items was less clear, and did not correspond closely with the rating of each item. For instance, 100% of the respondents rated "Footwear" a 4, i.e., "This item is essential to be included." Footwear was the only item to have 100% agreement, however in the ranking, not a single respondent ranked it as number 1 in importance. No respondent included it in the top three as importance to be included in the presentation, and only 6 respondents (30%) included footwear among the top six items of importance. Three respondents (15%) ranked footwear as 18th of 32 in importance, and one respondent ranked this item as 29th out of 32 in importance. Results were similar for other items. Appendix B shows the top 15 results and percentages for each item, as well as the top 15 rankings and their percentages. Of the top 15 items ranked, only seven reached the identified cut off of 70% agreement among the participants. This differed greatly from the rating of the items, in which items clearly met the 70% threshold.

In addition to the ratings and rankings, participants were offered the opportunity to suggest items that they felt should be but were not included on the list of choices (see Appendix

B for the results from the Zoomerang® survey). This opportunity was given at the end of each section. Not every participant responded to these questions. Under environmental issues, lighting/transitions in lighting were cited in eleven out of eighteen responses. Two respondents noted the presence of other individuals. Other responses included throw rugs, colors, and patterns. One person noted that the environment was not under the control of the older adult.

Related to mobility issues, twelve of the participants commented and the responses were somewhat varied. Most noted that the issues described in that section were all important to include in the presentation. Some included instruction on the benefits of physical therapy and restorative nursing, training staff on proper guarding techniques, "core strengthening exercises," among other things. Under age-related changes, ten respondents commented. A number of the comments were divided among two categories: this content was not important for staff to know, and this content should be more specific. Four individuals noted that hearing would be beneficial to include, and two noted dementia. Finally, the respondents were given the opportunity to add any additional suggestions regarding resident-related issues that should be included. Six of the twenty participants commented, most related to content already previously addressed in the survey. One participant included dementia in this section.

3.2.4   Discussion/Limitations

The typical Delphi Method survey technique of "rating" responses appeared to yield clearer results than the ranking method that was also used here. There was strong agreement among the respondents when rating the items on the importance of inclusion in the educational program. There was, however, little agreement among the respondents utilizing the ranking method, possibly due to the number of choices. Interestingly, there was little correlation between the

items that were identified as "essential to include" according to the ratings by the respondents versus their ranking from most to least important to include. Again, perhaps this was due to the number of choices. A couple of respondents commented that they were unclear as to what they were expected to do with the ranking system, as they had already identified what was important to include. A significant limitation of this study was the limited word choices utilized. For instance, the word "Visual" was placed under "Age-Related Changes." No item related to lighting or glare was placed under "Environment," as it was the intention of the investigator to utilize the age-related changes in vision to explain the need for proper lighting, minimizing glare, impaired depth perception and the resulting effect of colors and patterns.[79, 81-83] However, without making the survey unwieldy with lengthy explanations or operational definitions, there was no good way to convey some of these issues. A number of the comments from the respondents made this issue of wording clear, and that this issue held true for several of the choices. The participants recommended inclusion of items or concerns that fell under the auspices of topics or words that were used within the survey, but were interpreted somewhat differently by the participants.

Another limitation that arose due to wording was the choices made by the PI, such that the PI had a particular consideration in mind; however it was perceived differently by the respondents. A primary example of this would be the choice of the word "Attention" as used in the survey. It was chosen with consideration to two issues: the effect of attention on balance and falls,[99-110] as well as the consideration that older adults with dementia potentially have divided attention or the inability to attend to their environment.[300] Another item was "Agitation/Wandering," included by the PI to indicate the effect of dementia, or a common occurrence with dementia. The inclusion of these two terms, separate but related to the same

problem, was perceived by the PI as more clear to illuminate specific problems. As indicated by the comments of the respondents, using the word "Dementia" would have been more precise and appropriate for this purpose. Based on the comments by the respondents, "Attention" appears to be the only term affected by the latter issue, i.e., an interpretation different from that intended by the PI. "Vision" appeared to be the main concern with the former issue, in which the PI utilized a word to encompass issues and concerns related to the item, while the respondents indicated each individual issue under that term (for instance, difficulty with dim light, glare and other vision-related concerns). In another example, the respondents tended to elaborate on issues that would fall under "Clutter" (cords, throw rugs, crowding of room, and so forth). Items related to flooring/walking surfaces also seemed to result in further explanation or elucidation by the respondents. With the exception of "Attention" versus "Dementia," the participants' comments seemed to primarily serve to further illuminate or clarify the terms used in the survey, so no significant discrepancy in responses seems to have occurred. In retrospect, a technique known as "Cognitive Interviewing"[261] as described below may have been very useful in the development of the survey.

It is difficult to determine the cause of the discrepancy between the rating system versus the ranking system of the items. There was very strong agreement among the items using the rating system, with 13 items meeting the established cut-off of 70% agreement[289, 299] of respondents rating of "4 – This Item is Essential to be Included." Conversely, with ranking the items, only six items met that same level of agreement, all of which had a lower level of agreement than those using the ratings system. The items identified with the ratings system also closely matched with the information obtained through literature reviews and the observations made at the individual PCHs.

It could be the sheer number of choices that contributed to the lower level of agreement. With the ratings system, there were only four choices; the rankings system included 32 options to differentiate and rank. With so many choices, it is reasonable to expect a lower level of agreement on individual items. Also, the number of choices may have resulted in some confusion; it may have been difficult to process and precisely consider each option. Another possibility could even be as simple as the computer on which the participant completed the survey. The number of choices made it difficult for all options to appear simultaneously if the participant used a smaller computer screen. Due to the limitations of the program used (and other survey programs researched at the time), there was no option to change the way the items were listed to have them better fit the viewing area various computers. As a result, participants may have primarily compared and ranked items that were visible together, rather than being able to track all choices that were provided. Lastly, despite an explanation and instructions provided at the beginning of the ranking, at least one respondent expressed confusion at being asked to rank the same items that were rated.

None of the reasons above can clearly explain the vast discrepancy noted between specific items, as described above with "Footwear." Another study specifically focusing on the difference between the two survey approaches could potentially elucidate either technique problems, differences in thought processes utilized by respondents, or issues that have not yet been considered that may have contributed to the discrepancies. Had only the ranking system been used, then additional repetitions of the survey would have been necessary to identify the items to be included in educational program. However, given the strength of agreement on the ratings system as more traditionally used in the Delphi Method, as well the correlation with the

literature and the observations, only one round of surveys was necessary to identify the items for inclusion.

3.3   DEVELOPMENT OF PRE- AND POST-TESTS

3.3.1   Methods

The pre- and post-tests were developed to reflect the content, using instructions for test writing according to Nitko and Brookhart.[277] The questions were then reviewed for readability using Office Word® software program, setting the readability level for < 6th grade. Office Word® utilizes the Flesch-Kincaid Reading Ease Score, determining reading level using the Flesch-Kincaid Formula and the Coleman-Liau Formula. These formulae has been used with adult readers and accurately predicts grade level.[301] Among other limitations, this program will not identify any cultural or other bias, nor offer suggestions regarding improving readability.[302] Therefore, the next step in test development was cognitive interviewing in order to minimize class/cultural bias and make the questions more readable for the target audience[261]: non-professional staff in ALFs and PCHs.

After the test questions were completed, they were further refined through cognitive interviews with a small focus group of individuals providing care in a local PCH.[261] The test questions were reviewed one-on-one or in small groups with a total of nine[261] caregivers from a PCH not participating in the remainder of the study. The original plan had been to, with written permission from each participant, record the interviews.[261] An issue arose with recruitment, however, and this approach was abandoned.   A combination of techniques outlined by Willis[261]

69

of thinking aloud and verbal probing were used. Each participant was asked to read the test questions, first to themselves and then aloud to the PI.[261] The participant was then asked to put the question in his/her own words, and make any suggestions he/she thought would make the test question better.[261] Revisions to the test were made accordingly. Appendix C contains the forms used for the cognitive interviews: a descriptive form to gather information about the volunteers, the proposed pre-test for review, and two versions of a Likert scale for review – one to be used immediately after the educational program and one for one month later.

3.3.2 Results

Analysis of the data was completed utilizing both quantitative and qualitative techniques. Simple statistical analysis was done using the information from the volunteers to provide a general description of the group. In addition to the mean and standard deviation, the median was also calculated due to the wide range and some values being somewhat extreme. The responses were analyzed according to Willis.[261]

The participants were a sample of convenience, all volunteers from a local PCH/ALF with a religious affiliation. All were female, ranging in age from 48 to 63 years old (mean: 54.7; SD: 7.19; median: 54). All but two (77.8%) identified themselves as Caucasian, with one identifying herself as Native American, and one as Asian. The amount of time working with older adults varied greatly, ranging from 1 years to 31 years (mean: 11; SD: 11.25; median: 7.0). The number of years working within an ALF/PCH also varied greatly, from one year to 27 years (mean: 7.5; SD: 8.62; median: 5.0). A table describing the participants can be found in Appendix C.

The original pre-test and the revised pre-test based on the interviews can be found in Appendix C. The revisions are noted as is via the "Track Changes" function in Microsoft Word®, followed by the corrected forms subsequently used. The post-test used can also be found in Appendix C, immediately after the revised pre-test. It is essentially the same, only with some of the questions and/or choices in a slightly different order. This was done to encourage the participants to carefully read and consider each choice, rather than quickly responding based on their recall of the questions on the pre-test. Very few suggestions were made for revisions, with the primary and most consistent one being to change the term "older adult" to "resident" to be more consistent with the terminology used in ALFs/PCHs. A significant error had been made on one question, but was not noticed by the early participants. Once the error was noted by the PI, the question was corrected, then reviewed by the remaining participants.

While the one-on-one interviews were helpful, it was a small group interview that yielded the most interesting discussion, and probably the most substantive change. In one question, the word "dinner" was used:

9.) You are trying to get residents ready for dinner, and this one resident always gets agitated and confused late in the day. When he gets this way, he starts walking around like this. What should be done:
a.) Make him sit down, and stop him if he tries to get up
b.) Tell one of the other residents to holler for you if he starts wandering around
c.) Put him in a chair at a table and push the chair in so he can't get up
d.) Have him lie down after lunch for a little while *CORRECT ANSWER*
e.) A & B

In this question, the intention was to have the participants recognize that the resident was exhibiting "sun-downing"[300] issues in-between the mid-day meal and the evening meal. One of the participants repeatedly stated that the question didn't make sense because "How can we lay him down after the meal when he's confused before? What difference will it make?" Other

participants in the group stated he would be more "well-rested", and thus less confused, if he were to lay down after lunch. The discussion became circular, with the one volunteer repeatedly stating that it didn't make sense to lay him down after the meal if he was confused beforehand – that it would make no difference. The other three in the group continued to respond that laying him down after lunch would be a good choice to decrease his agitation. After multiple (at least five) rounds of this circular argument, the PI finally realized how each volunteer was interpreting the question differently. The PI realized that, in certain areas, the term "dinner" is used interchangeably with the term "lunch," i.e., both indicating the mid-day meal. This was based on the PI's experience as this particular colloquialism, while not unheard of, is not commonplace in this area (Pittsburgh, Pennsylvania region). When asked, the volunteer who had expressed confusion acknowledged that that was how she was interpreting the term "dinner." With that information, all four participants in the small group admitted to having heard that usage before, and agreed that the wording of that particular question was then confusing. It was agreed by all that changing "dinner" to "supper" removed that confusion. This issue had not been identified on the three previous interviews, nor on subsequent interviews (although after subsequent respondents had an opportunity to state their opinions, the PI advised the participants of that previous discussion and planned change, and each agreed that the question could be mis-interpreted and was better with the revision).

Other comments were somewhat inconsistent. A number of respondents indicated that the wording of the test was fine as is: they understood the wording clearly, they found nothing ambiguous, and they could think of no better phrasing. Others, however, had suggestions to change or improve the wording. In one or two cases, the suggestions elevated the reading level above the projected 6th grade level.[252-255] In those cases, the suggestions were not accepted.

One question referred to the number of medicines a resident was taking. In the first small group, one person suggested changing the term to "medications" or "meds," as that was more consistent with how they referred to the drugs residents were taking. She noted that the question was not unclear as written, "just not consistent with how (they) referred to things." The others in the group agreed with that statement. In future interviews, while no one else independently identified that issue, when asked at the completion of the interview their opinion on that change, the subsequent volunteers agreed with that proposed change.

Three of the questions were to elicit lists of risk factors from the participants based pictures shown. In each, the potential existed that the image shown had no risk factors for falls. The wording was originally:

Write down all the things in this picture that might make a resident fall. Write the word "nothing" if you don't see any problems:

It was suggested by several respondents to change "nothing" to "no problems." Although subsequent interviewees did not independently note that issue, when asked after they had given feedback what they thought of that change, the participants agreed that was clearer.

In general, few comments and few changes were made. The primary ones consisted of:

1.) Correcting one question that had been incomplete as written
2.) Changing any reference to "older adults," "elders," or "elderly" to "residents" to be consistent with terminology utilized within this setting
3.) Changing "dinner" to "supper"
4.) Changing "nothing" to "no problems" in three listing questions
5.) Changing "medicines" to "medications" or "meds" (both were used on the test for clarification)

A few small word changes were recommended by one or two respondents, and although they were not noted by a majority of volunteers, upon review, the PI felt that the suggestions did

make the questions and/or statements more readable and made the decision to include those changes. Conversely, as the content was read aloud by the participants, at times the PI came up with wording that she felt would be an improvement, however if none of the participants commented on a problem, the PI left the wording as is.

No recommendations were made for changes to the Likert scales. Upon review with the volunteers, the PI realized that the instructions for the ratings may be clearer if the definition of each end of the spectrum was placed above the numbers in addition to being provided in the instructions. Although the informants did not note this on their own, when asked if they felt this would be helpful, all agreed that it would be beneficial to include that information. The revisions are noted in Appendix C as indicated by markings from the "Track Changes" function from Microsoft Word®, followed by the completed revised forms later in the same appendix.

3.3.3 Discussion

It was quite difficult to recruit volunteers for this part of the study. Numerous PCHs and ALFs were contacted by phone and in person, and sign-up sheets with explanations of the study were placed in common areas (break rooms and/or shift clocks). The participants were assured anonymity, and $10 Target® gift cards were being provided as thank you gifts, as well as a snack and soft drink wherever the participant chose to meet the PI. No one signed up. In some facilities, the PI was given the names of people to contact at work, as they had expressed interest. The PI was told the best time to call to reach the person. Each time, the person declined, stating she "didn't have time," some citing second jobs and/or family responsibilities and/or travel time (the PI did offer to meet wherever it was convenient for the volunteer). Eventually, a few volunteers did sign up from one facility. During the meetings, other information was shared with

the PI once the interview was completed. Apparently, some individuals were reluctant to sign up, as they thought they were being tested, and that the test could be held against them (despite the recruitment flyer specifically stating otherwise). Others felt that management was trying to get information from them, or that it was some sort of trick by management. Some stated that they simply did not understand the intent. All of this information was provided unsolicited to the PI, after the interviews were completed. After the first few interviews, the volunteers returned to the facility, explained that none of the fears were based in reality, and encouraged others to participate. The PI was then able to recruit a total of nine volunteers to complete the interviews. Most of the interviews were conducted at the volunteers' place of employment, so none received any of the food and drink offered by the PI. The participants thanked the PI, stated they enjoyed participating in the process, and that they had learned a lot about the topic. Because of the difficulty in recruiting and the apparent apprehension to participate, the PI decided not to record the interactions, but rather note discussions and comments, and have each participant write her recommendations on a test form, along with the rationale for the recommendations.

One limitation of this study is that the group of volunteers was somewhat homogenous. They all came from the same facility – one in which very high standards of care are maintained and one in which there is very little staff turnover, indicating a stable work environment. All were female, and the vast majority Caucasian. The PI has experience in a variety of ALF/PCH, and not all are as well-maintained, with as stable a staff. This facility is on a campus which provides multiple levels of care, from independent to skilled nursing, and residents may move among the different levels of care as their needs indicate. The residents tend to come from a higher socio-economic strata compared to other local facilities.

The type of facility, as well as the homogeneity of the volunteers, did seem to have an implication for some of their responses. Some of the choices for the questions (ex., "…tell another resident to holler if he tries to stand up;" "…push the chair into the table so he can't stand up…") were seen as inappropriate behaviors that would result in disciplinary actions at this facility. These are behaviors that have been observed by the PI at other facilities. Because these options were foreign to this group, they did not view them as viable choices. Based on the PI's experience, however, these choices remained, as they would seem appropriate in some facilities.

Another limitation related to the responses of the volunteers was their knowledge of the content. With several questions, the volunteers did not know the answers, nor know that the factors included in the questions could contribute to increased fall risk. As a result, the participants sometimes initially identified certain choices as problematic. Through discussion, the PI was able to determine that the issue was related to knowledge of the content. Once the volunteers were educated on that aspect, they re-evaluated the question and the choices and were better able to make recommendations.

This was the first time that the PI has used cognitive interviewing, so it is likely that the PI may have made errors in applying the technique. The PI found it difficult not to interject at times as the volunteers mulled over some of the wording, wanting to offer alternative choices (once inadvertently doing so). As the interviews progressed, the PI became more adept at asking probing questions to elicit the thought processes of the volunteers, but initially was both reluctant and inexperienced at verbalizing anything for fear of unduly influencing the volunteer. The best learning experience for the PI was the first small group interview. The discussions held among the participants themselves helped the PI to better recognize issues with the wording, as well as better identify how to ask questions of future participants.

One final limitation is based solely on an impression by the PI. Two or three of the volunteers appeared to skim the pages quickly and reported no changes or recommendations. In an attempt to have them go through each item aloud, the volunteers again read them quickly, with no recommendations. An additional attempt to go through individual questions with the PI attempting to ask some probing questions was met with the same response. With these volunteers, it was difficult to tell how vested they were in providing feedback. Nonetheless, there were other volunteers who had spent significantly more time poring over the documents, thoroughly reading the questions and choices aloud and answering questions also had no recommendations for changes on their own. Thus, the feedback from these volunteers who appeared more rushed did not differ from some of the other volunteers, and there was no tangible reason to assume that their feedback was any less pertinent or valid than that of the remaining participants.

There are several likely explanations for the small number of recommendations from the volunteers. The stems for each question tended to be quite short, as did the majority of the choices for the possible responses. Many of the questions had responses that were based on pictures in slides rather than word choices, thus further limiting the number of words and phrases for potential misunderstandings. The test and Likert scales had already been evaluated and adjusted for reading level, so significant further correction may not have been necessary. Lastly, possibly a more varied group would have had additional recommendations to make the test more culturally diverse.

3.4   PRIMARY STUDY

3.4.1   Subjects

Six local ALFs/PCHs, a sample of convenience, were utilized. A total of 120 individuals were trained, ranging in age from 18 years old to 80 years old (mean: 42.56; SD: 15.71; median: 43), with 20 of the participants filling in "PNTA," or "prefer not to answer," or simply not responding to that question. Of the 120 participants, 20 (approx. 17%) identified as male; two indicated PNTA and one did not respond to gender, thus three (2.5%) are unidentified; the remaining 97 (80.8%) were female. Twelve (10%) individuals identified as African-American or Black, three (2.5%) identified as Asian, 88 (73.3%) as Caucasian, eight (6.7%) as "Mixed Race," three (2.5%) as Native American, one (.8%) as Hispanic and six (5%) are unidentified, with two indicating PNTA, and four (3%) who did not answer. Among individual facilities, the racial diversity was less mixed. Their experience working with older adults varied greatly, ranging from 0 to 33 years (mean: 10.84; SD: 8.26; median: 10). Regarding how long each individual has worked in an ALF or PCH, the range varied from 0 to 33 years (mean: 7.07; SD: 6.33; median: 5). When the program was proposed to the administrators, it was explained that the target audience was the non-professional direct care providers, often referred to as resident care aides. It was suggested, however, that any non-professional staff who have the opportunity to observe and interact with the resident may benefit from this training. It was stressed that registered nurses (RNs) and licensed practical nurses (LPNs) should not be included, as they have already had some of this information as part of their professional training, and the information would be presented at too low a level for the professional staff (breadth, not depth, of information). Nonetheless, many of the administrators included RNs and LPNs in the

training. Depending on the facility, individuals from multiple positions throughout the facility were represented. Appendix D contains descriptive information for all of the facilities combined.

One was family-owned, while the others were all part of a large medical organization. Several others were scheduled that were not part of that particular organization, but due to various issues, these facilities had to drop out of the study. The facilities varied in size and services. In ALFs/PCHs in Pennsylvania, employees can perform more than one task, as allowable by their level of education/training. No one is permitted to do the job of another for a position which requires additional training or specialized formal education.[303] In some facilities, the staff may provide direct resident care, as well as housekeeping responsibilities, cooking responsibilities, and other duties as per their job description. In other facilities, the roles of each position are clearly defined and there is no crossover from one job to the next. Both types of facilities are represented in this study. Several of the facility administrators included all staff in the training program, even those who are not involved in direct care, as each person who comes in contact with or observes the residents in some capacity may have some input into fall prevention. Other facility administrators included only those staff who are involved in providing direct resident care. In this study, the only facility in which caregivers performed the other duties as well direct caregiving was the family-owned facility. Aides' job responsibilities generally include:

> (1) Provision of personal care and assistance to clients.
> (2) Working with other staff members as required in implementing
> and carrying out services and activities and meeting the needs of
> individual clients.
> (3) Assisting with transportation or escorting clients to, from
> and within the center, if appropriate.[303]

Administrators varied in their approach to the educational program. Some facility administrators made the training program mandatory for all departments, including those who only work in the kitchen, as well as LPNs/RNs and other departments. Other facility administrators made the program mandatory only for the resident care aides, with some including LPNs and RNs. One facility opened the program to all departments, but the program was not mandatory – attendance was purely on a voluntary basis. Please see subsections of Appendix D for a description of the individual ALFs/PCHs and for descriptions of the subjects.

No identifiers were included on the tests turned into the researcher other than an identifying number. This number corresponded with a list of participants held by the facility administrator, including date and position. Thus, there was no way for the researcher to identify any individuals personally. The forms (demographic information, pre-test, post-test and rating form) from each facility were separated from one another for organizational and analytical purposes. This also provided further anonymity for the participants, as their demographic information and their program ratings could not be linked to any one individual, or to their tests.

3.4.2 Methods

Based on the literature review, observations, and Delphi Method survey previously described, a training program was developed, utilizing a combination of PowerPoint® and experiential learning. As the participants entered, they were instructed to sign in on the provided "sign in" sheet, and to remember the number next to the line on which they signed. The participants first filled out the demographic forms and placed them in envelopes themselves, to maintain anonymity. The staff were then administered a pre-test, which can be found in Appendix C.

Rather than answer straight "word"-type questions, the test included a "practical" portion in which the subjects viewed pictures in a PowerPoint® presentation as a group, as well as two videos, and identified potential fall risks on their test sheet. The purpose of this was to have the staff view "real-life" situations that they may come across, and test if they can recognize safe versus unsafe situations. Several of the questions were a more typical question format in which the stem of the question, as well as all of the choices, were written out, but the majority involved assessing a scene or image, and determining correct choices and impediments to safety. Although the state of Pennsylvania requires either a high school diploma or a high school equivalency examination in order to be a caregiver in an ALF or PCH, the quiz was revised according to the above-described technique of cognitive interviewing, and checked for readability and at or below a sixth grade level. The wording of the presentation was refined through cognitive interviewing prior to administration to any of the ALFs/PCHs and maintained at a 6th-8th grade level.[252-255] On the test, the participants were asked to identify spills, proper/improper use of assistive devices, proper footwear, and a variety of other issues related to falls that the staff can manage. Some slides had no issues that were trouble-some, and staff were to recognize those as well. A small number of questions focused on age-related changes that contribute to increased risk of falls.

Learning objectives for the program can be found in Appendix D, section 4.1. Because experiential learning has been found to be more effective than strict lecture or other approaches,[231-232] the program was developed using TurningPoint Technologies® response systems in conjunction with PowerPoint®. The TurningPoint Technologies® response system is an approach that allows participants to respond to questions anonymously, but still receive immediate feedback on their responses. The participants are provided with a "clicker," or card

with buttons that allow them to respond to a question. The signals go to a receiver attached to the computer, recording all the responses. A tally of the responses will show up on the screen, so it is easy to see how many people chose the various alternatives, without revealing who chose which alternative. This allows for the elimination of fear of answering incorrectly, as no one besides the individual will know. It is possible to "save" a session, and thus the presenter can have access to what responses were sent from any given "clicker."

After consulting with an expert in education (ER), it was determined that some background information needed to be provided to the participants on some of the issues related to falls, thus giving them the tools to better participate in the rest of the program. Thus, after the pre-test, a brief introduction was given. To encourage the participants to attend closely to this portion of the program, they were told in advance that they would be competing in a game after the brief lecture, and the content being reviewed would be pertinent to the game.

After the brief introduction, the participants were instructed to pick up the controls they had been given as they arrived. To "register" their devices, a nonsense question was posted on an introductory slide, asking each participant to vote on his/her favorite animal of the choices provided (dog, cat, rabbit, ferret, other). The participants were able to immediately see their vote registered. On the next slide, the participants were instructed to press "1" if their sign-in number was odd, and "2" if their sign-in number was even. This established each participant's team. The results appeared on the team slide, thus indicating the number of players on each of the two teams. Although a participant's response would register under his/her team, the instructor (i.e., the PI) stressed that each individual's response was anonymous, and no one would know whom else was on his/her team. For the remainder of the game, a PowerPoint® slide with photos or drawings was then shown, and a question was asked verbally. The staff were asked to vote on

the choices provided. The number of votes for each choice would show up, and then the correct response would be identified as each team's number of correct responses would be revealed. After everyone had voted, and the scores revealed for each question, each question would be followed up with a small amount of additional information regarding that slide. At the end of the presentation, the winning team was to be provided with one small prize, and the runners up provided with another.

After the game, the post-test was administered. The post-test was essentially the same as the pre-test, however the order of the questions was altered somewhat, and the order of the choices in some of the questions was also altered. This was to minimize the likelihood of participants simply answering without paying attention to the questions due to their familiarity.

To assess if the information was retained, a repeat post-test was done beginning one month after the presentation. This follow up post-test was completed by participants individually when they were in for a regularly scheduled shift, rather than all participants being tested together. This was done because administrators would have had to pay and schedule participants to come in to work specifically for the test. It was unrealistic to expect administrators to agree to pay staff for this portion of data collection, and it would likely be difficult to schedule the original group of participants at one time. Instead, a package was dropped off at each facility at approximately one month post-presentation. This package included instructions for the administrator, as well as a facility description form for the administrator to complete and return. Also provided were printed versions of the slides, with a still image from each of the two videos, and post-test forms for the participants to complete when they were present for a regularly scheduled shift. The participants were to use the printed versions of the slides to answer the test questions. Knowing that attrition was likely, the participants were asked to complete another

descriptive form to help establish the characteristics of the second group. Lastly, the participants were asked to complete another Likert scale, reflecting on the impact of the educational program on their day to day work. There are no individual identifiers on the test (other than assigned number and job title), and only staff present at the training session were to complete the second post-test. The administrator, for his/her own staff training and payroll records had a sign in sheet for the staff. This list was not available to the primary researcher, nor were test scores available to the administrator. This was in order to protect everyone's anonymity and ensure the staff that there would be no repercussions from administration for test results. The administrator utilized the sign-in sheet to identify which employees should be offered the one month post-test. Furthermore, the sign-in sheet was utilized to identify the disposition of individuals who were lost to follow up with the second post-test (i.e., changed jobs, on medical leave, and so forth). While ideally a longer period would have passed before the second post-test, thus allowing a better assessment of learning over time, ALFs and PCHs have frequent turnover and there was a concern that if more time passed before the second post-test, those staff members trained may have changed jobs. Small thank you gifts were left to be provided to each participant once he/she completed the post-test and other paperwork. Once the post-tests were completed, the primary researcher gathered the completed packages for analysis.

3.4.3   Data analysis

Although this program was developed primarily for RCAs, a number of the administrators made the program mandatory for all staff, including professional and non-professional staff, as well as caregivers and non-caregivers. Because of the inclusion of staff from various departments, the

test results were analyzed according to the department/job identified on the test forms by the participant. This was done per facility, as well as combined across facilities. Detailed data analyses and raw score results can be found in Appendix D; only data analyzed across facilities are presented in the body of this paper. Due to the disparity of some of the data points, in the analysis of descriptive statistics, the median was determined in addition to the mean and standard deviation. Microsoft Excel® was utilized to analyze the data to determine descriptive statistics.

A secondary outcome was the participants' evaluation of the program utilizing a six-point Likert scale. Because the Likert scale utilized to evaluate the program contained no identifiers, the evaluations were analyzed grouped per facility and all facilities combined only. There was no mechanism by which to analyze them according to job position.

The data were first analyzed utilizing Microsoft Excel® to determine descriptive statistics of raw scores and percent correct on the pre-test, raw post-test scores along with the percent correct, and raw change in scores with the percentage of change. The data were further analyzed utilizing IBM SPSS® Statistics 22. Because the test utilized was developed specifically for this educational program, it has not been standardized and cannot be assumed to yield a typical bell-shaped normal distribution. Thus, analyses for non-parametric data were performed. When analyzing the data from all three test iterations, the Friedman test for repeated measures was used. When analyzing the results of two test administrations, the Wilcoxon Signed Rank test (WSRT) for two related samples was used, with the statistical significance set at 0.05 and the confidence level at .95.

Data from the one-month follow up are not available for Facility 6, due to lack of response of the administrator of that facility. Because of the numerous iterations of analyses, details are presented in Appendix D.

3.4.4 Results

Initially, 120 participants across all facilities participated. The vast majority (85%) were female (Figure 1). The largest racial demographic represented was Caucasian (74%), with individuals identifying as African-American/Black making up the second largest group (10%). Six percent identified as mixed race, 5% either preferred not to answer (PNTA) or left the question blank, and approximately 2% each identified as Native American or Asian (Figure 2). The target audience of RCAs made up 51% of the total sample, with the next largest group at a combined 16% was made up of LPNs (12%) and RNs (4%). Housekeeping made up the third largest group at 10%, and the rest of the participants were office staff (7%), kitchen staff (6%), 3% who did not answer, 2% each of activity staff, dietary staff and maintenance,   and one driver (1%), as represented by Figure 3.
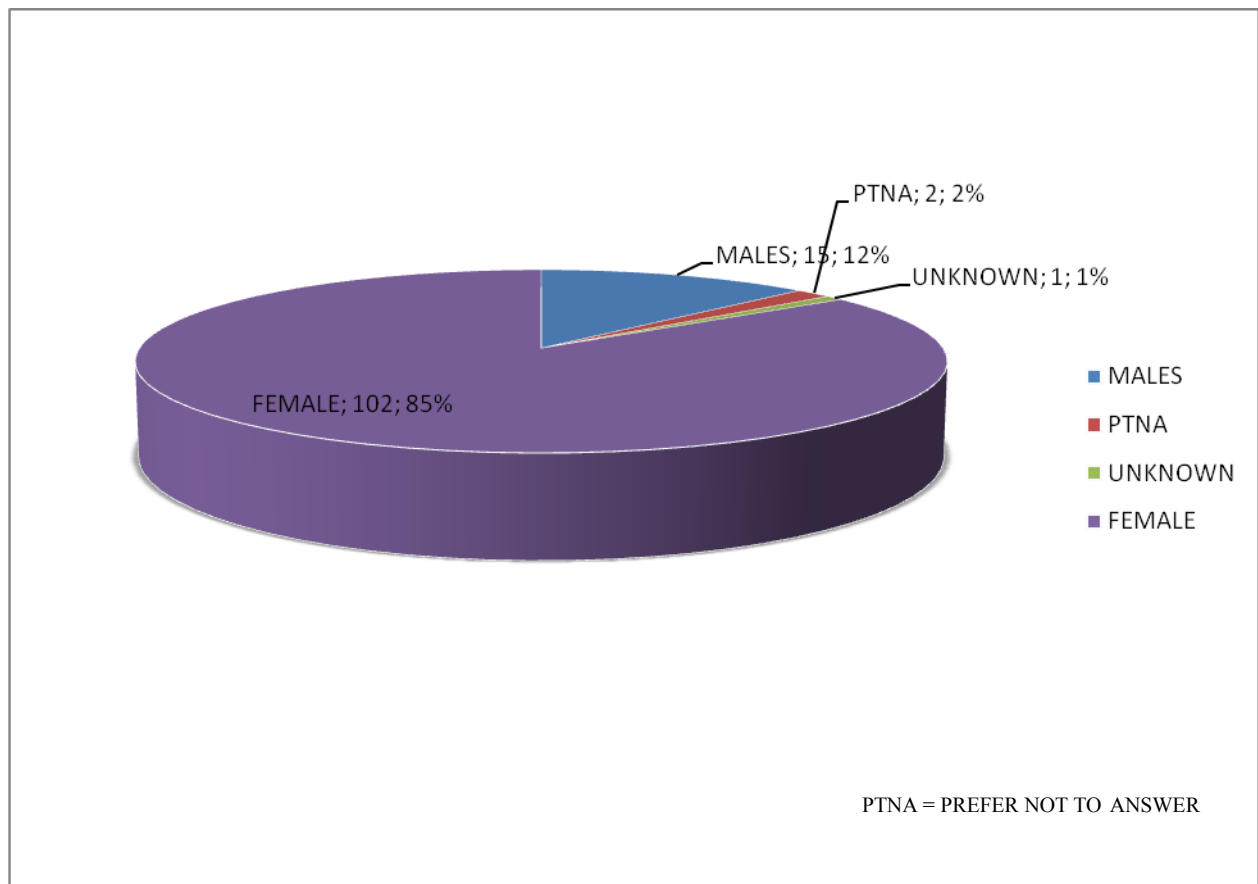
Figure 1. Initial participants by gender
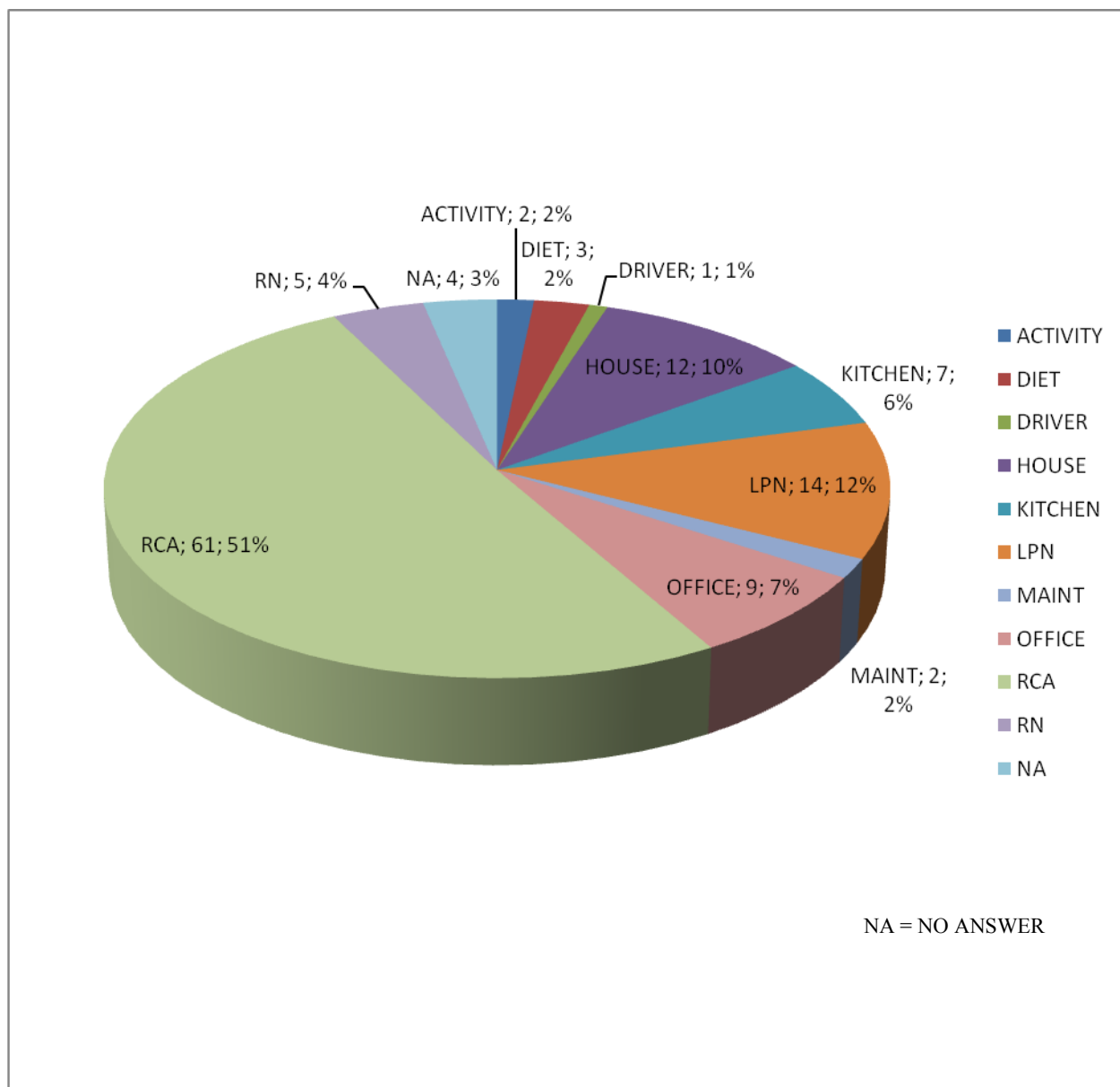
Figure 2. Initial participants by job
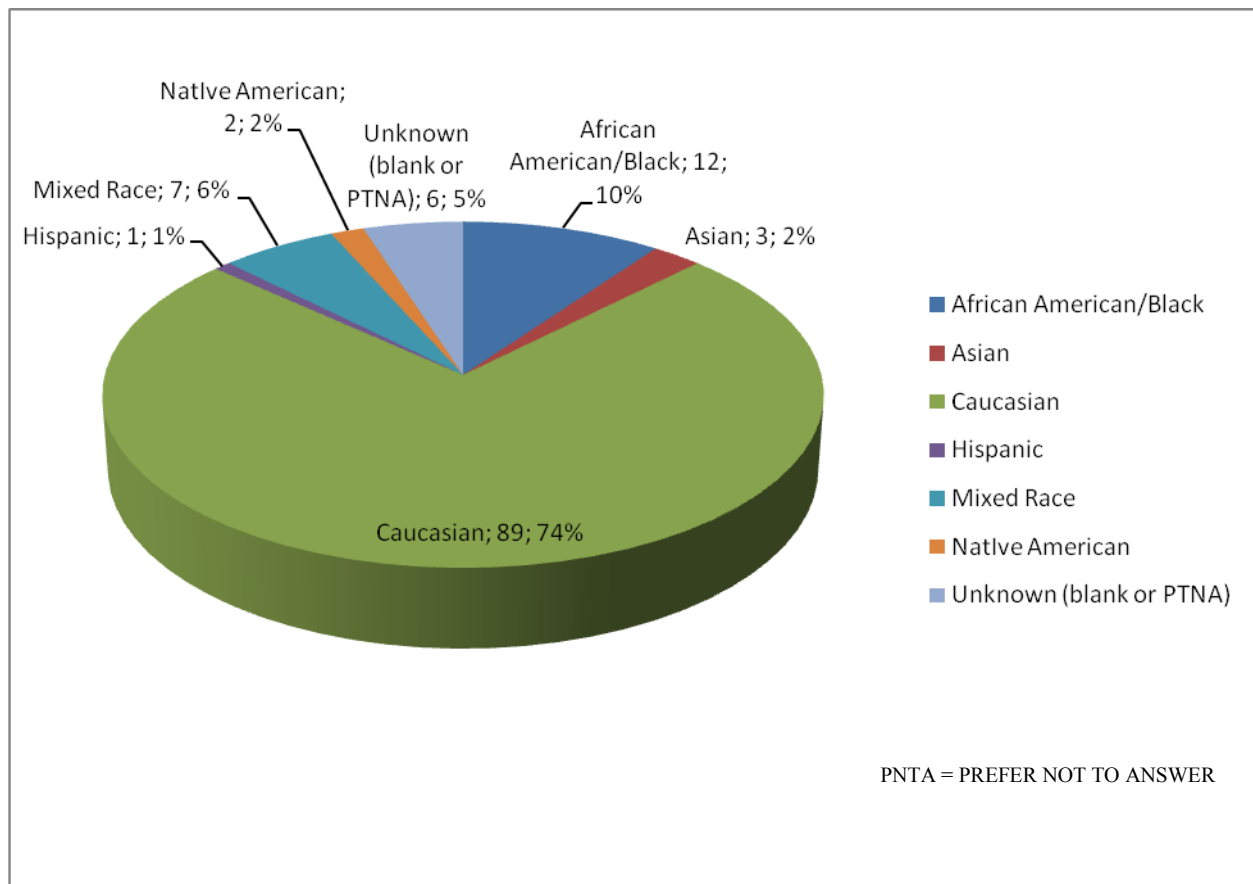
Figure 3. Initial participants by race

3.4.4.1 Results from all participants across all facilities: day of presentation

A total of 98 participants completed both the pre-test and the post-test administered immediately after the program. The raw data and the analyses are available in Appendix D. For the pre-test, the range for the raw score for all participants was 0-19 points (mean: 10.7; SD: 3.12; median: 11). Twenty-two points were possible on the test, resulting in a range of 0-86.36% correct on the pre-test (mean: 48.65%; SD: 14.18; median: 50%). The range of raw scores on the post-test for all participants was 5-20 points (mean: 14.18; SD: 2.99; median: 15), with the range of the percent correct from 22.73-90.91% (mean: 14.18; SD: 2.99; median: 15). The change in raw

score ranged from -8-15 points (mean: 3.49; SD: 3.59; mean: 4), with a range of percent change from -36.35-68.18% (mean: 15.86; SD: 16.33; median: 18.18). The scores of all participants were compared to determine if the changes in scores were statistically significant (Table 6).

Table 6. Results of all participants across facilities taking both pre-test and the post-test

	PRE TEST	PERCENT CORRECT	POST TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
MEAN	10.7	48.65	14.18	64.47	3.49	15.86
SD	3.12	14.18	2.99	13.57	3.59	16.33
MEDIAN	11	50	15	68.18	4	18.19

"Pre-test," "Post-test," and "Raw Change" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -7.079; p-value 0.000

Table 7 represents the results of an evaluation of the program by all participants. A six-point Likert scale, ranging from 0-5, was utilized to evaluate the program. The overall results ranged from 0-5 (mean: 4.55; SD: 0.8; median: 5).

Table 7. Likert scale evaluation immediately post-educational program, all participants

	ITEM 1	ITEM 2	ITEM 3	ITEM 4	ITEM 5
MEAN	4.63	4.55	4.51	4.55	4.57
SD	0.79	0.73	0.87	0.82	0.8
MEDIAN	5	5	5	5	5

Total evaluation score: mean 4.55; SD 0.80; median 5.0

1.) This program was easy to understand.
2.) This program increased my understanding of the topic.
3.) I can use this information in my day-to-day work.
4.) This information will help me care for the residents better.
5.) I would recommend this program to be used in the future.

3.4.4.2 Results from target audience across all facilities: day of presentation

The RCAs were the target audience for this educational program. The RCAs were analyzed alone, with an *n* of 49 having completed both the pre-test and the immediate post-test, the range of the pre-test was 0-17 points (mean: 10.59; SD: 3.14), the post-test from 3-20 (mean: 13.82; SD: 3.434). The raw score change ranged from -8-15 points (mean: 3.25; SD: 3.903). The WSRT analysis of these data revealed a *Z*-score = -4.778, and a 2-tailed asymmetrical significance of .000 (Table 8). The RCA data were also analyzed with facility 6 removed, as facility 6 represented an outlier, with scores decreasing from pre-test to immediate post-test (Table 9). Without facility 6, the range in scores at post-test was 7-20 points (mean: 14.60; SD: 2.595); no change in pre-test results. The comparative statistics in the raw scores resulted in a *Z*-score of -5.126 and a significance level of 0.000.

Table 8. Results of all RCAs across facilities taking both the pre-test and the immediate post-test

	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
MEAN	10.74	48.81	14.04	63.83	3.24	14.72
SD	3.04	13.8	3.16	14.37	4.03	18.31
MEDIAN	11	50	14	63.64	3	13.64

"Pre-test," "Post-test," and "Raw Change" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -4.778; *p*-value 0.000

Table 9. Results of all RCAs across facilities taking both the pre-test and the immediate post-test, facility 6 removed

	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
MEAN	10.71	48.7	14.6	66.34	3.86	17.53
SD	3.16	14.35	2.6	11.8	3.48	15.83
MEDIAN	11	50	15	68.18	4	18.18

"Pre-test," "Post-test," and "Raw Change" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -5.126; *p*-value 0.000

3.4.4.3 Results from other participant groups across all facilities: day of presentation

Licensed practical nurses/Registered nurses

Other groupings of participants all showed varying levels of significance, all less than 0.05, however the *n* of each group was lower. For the licensed professionals, RNs and LPNs, the total *n* was 6, with four LPNs. The pre-test range was 8-16 (mean: 10; SD: 2.966), and the post-test range was 6-13 points (mean: 16; SD: 2.366). When the pre-test and immediate post-test scores were compared, the resulting *Z*-score was -2.214, with a significance level of 0.027 (Table 10).

Table 10. Results of all LPNs/RNs combined across all facilities

FORM	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
MEAN	10	45.45	16	72.73	6	27.27
SD	2.97	13.48	2.37	10.76	3.03	13.79
MEDIAN	9	40.91	17	77.27	6	27.27

"Pre-test," "Post-test," and "Raw Change" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -2.214; *p*-value 0.027

Nursing

A group of participants identified only as "nursing" on the tests was analyzed separately from those who clearly identified as licensed nurses. It was clear from the demographic information that some of these individuals were RCAs, and others were LPNs or RNs. Because it was not possible to clearly differentiate, this group was analyzed as its own entity (n=11). The range on the pre-test was 7-19 points (mean: 12.55; SD: 3.267). On the post-test, the range was

92

12-19 (mean: 16.09; SD: 2.071).   Comparative *s*tatistical analysis yielded a Z-score of -2.409

and an asymmetrical 2-tailed significance level of 0.016 (Table 11).

Table 11. Results of all participants identified as only "nursing," combined across all facilities; includes RCAs, LPNs and RNs

	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
MEAN	12.55	57.02	16.09	73.14	3.55	16.12
SD	3.27	14.85	2.07	9.42	3.56	16.18
MEDIAN	13	59.09	16	72.73	4	18.18

"Pre-test," "Post-test," and "Raw Change" are all given in points out of 22 total possible points.   Comparative statistics of raw scores only, with Z-score -2.409; *p*-value 0.016

Housekeeping

Those identified as housekeeping staff resulted in an *n* of 9 across all facilities.   Their

range on the pre-test was 3-13 points (mean: 8.44; SD: 3.812), and on the post-test was 9-16

points (mean: 12.56, SD: 2.455).   The resulting Z-score was -2.535, with the significance at

0.011 (Table 12).

Table 12. Results of pre-test and immediate post-tests of all participants identified as housekeeping across all facilities

	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
MEAN	8.44	38.38	12.56	57.07	4.56	20.71
SD	3.81	17.33	2.46	11.16	1.81	8.23
MEDIAN	9	40.91	13	59.09	6	27.27

"Pre-test," "Post-test," and "Raw Change" are all given in points out of 22 total possible points.   Comparative statistics of raw scores only, with Z-score -2.535; *p*-value 0.011

Non-caregiving staff

Other non-caregiving staff participating were analyzed as a single group (*n* = 22). The pre-test scores ranged from 3-13 points (mean: 9.41; SD: 3.096). Post-tests ranged from 7-18 points (mean: 13.62; SD: 3.203*).* Comparative statistical analysis with the WRST indicated a Z-score of -3.831, and the asymmetrical 2-tailed significance as .000 (Table 13).

Table 13. Results of pre-test and immediate post-test for all non-caregiving staff combined across all facilities

	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
MEAN	9.41	42.77	13.36	60.74	4.14	18.8
SD	3.1	14.07	2.59	11.78	2.8	12.73
MEDIAN	9.5	43.18	13	59.09	3.5	15.91

"Pre-test," "Post-test," and "Raw Change" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -3.831; *p*-value 0.000

Group without identifiers

The final group analyzed was a group of participants who provided no identifying marks on their tests. Based on the demographic forms, it was apparent that these individuals (*n*=13) could be from any department within a facility. Pre-test scores ranged from 8-15 points (mean: 11.54; SD: 2.757), with the post-test scores ranging from 7-18 (mean: 13.62; SD: 3.203). The WRST analysis resulted in a Z-score of -2.084 and a significance level of 0.037 (Table 14).

94

Table 14. Results on pre-test and immediate post-test by participants without any identifying marks on their tests, combined across all facilities

FORM	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
MEAN	11.54	52.45	13.62	61.89	2.08	9.44
SD	2.76	12.53	3.2	14.56	3.01	13.69
MEDIAN	11	50	14	63.64	1	4.55

"Pre-test," "Post-test," and "Raw Change" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -2.084; *p*-value 0.037

3.4.4.4 Results of all participants across all facilities: follow up testing

Eighty-three individuals participated in the one month follow up testing (68 females, 12 males, 1 preferred not to answer). Appendix D contains detailed analyses of all raw data. Eleven of the participants identified as African-American, 59 as Caucasian, two each as Mixed Race and Hispanic, one as Asian, and six undetermined (five preferred not to answer [PNTA], one left this item blank). Their age range was 19-80 years old (mean: 43.27; SD: 15.72; median: 44.0; 16 indicated PNTA, 4 left item blank). They ranged in experience with older adults from 0-35 years (mean: 11.27; SD: 8.22; median: 10.75; 1 left item blank) and in experience in ALFs/PCHs from 0-20 years (mean: 6.84; SD: 5.62; median: 5.00; 2 left item blank). Comparison of the test scores among participants on the pre-test (*n*=105, range: 0-19; mean: 10.73; SD 3.095), immediate post-test (*n*=101, range 5-20; mean: 14.18; SD: 2.944) and follow up post-test (*n*=83, range 5-20; mean: 13.55; SD: 3.194) resulting in a Chi-square score of 46.949, with 2 degrees of freedom, and a *p*-value *of* 0.000 (Table 15). Table 16 shows the comparison of the pre-test and immediate post-test showed a change in test scores after the educational program (*n*=101, Z-score -6.915; *p*-value 0.000). Comparing the pre-test and follow up post-test scores (Table 17) also demonstrated an improvement in test scores following the educational program (*n*=83, Z-

score -4.989; *p*-value 0.000). A comparison of the immediate post-test scores and the follow up

post-test scores indicated a slight decline, as shown in Table 18 (*n*=83, *Z*-score -1.952; *p*-value

0.051).

Table 15. Comparison of pre-test, immediate post-test, and follow up post-test scores from all participants combined among all facilities

	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FOLLOW UP TEST	PERCENT CORRECT	RAW CHANGE FROM PRE-TEST	PERCENT CHANGE FROM PRE-TEST	RAW CHANGE FROM POST-TEST	PERCENT CHANGE FROM POST-TEST
MEAN	10.72	48.74	14.37	65.33	3.65	16.59	13.55	61.61	2.83	12.87	-0.82	-3.72
SD	2.94	13.34	2.65	12.06	3.48	15.82	3.19	14.52	4.27	19.4	3.5	15.89
MEDIAN	11	50	15	68.18	4	18.18	14	63.64	3	13.64	0	0

"Pre-test," "Post-test," "Follow up test" and "Raw Change" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Chi-square 46.949; df 2; *p*-value 0.000

Table 16. Comparison of pre-test and immediate post-test scores among all participants across all facilities who completed all three tests

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	105	0	19	10.73	3.095
POST	101	5	20	14.18	2.944
Valid N (listwise)	101				

"Pre-test" and "Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with *Z*-score -6.915; *p*-value 0.000

Table 17. Comparison of pre-test and follow up post-test scores among all participants across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	105	0	19	10.73	3.095
FOLLOW	83	5	20	13.55	3.194
Valid N (listwise)	83				

"Pre-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with *Z*-score -4.989; *p*-value 0.000

Table 18. Comparison of immediate post-test and follow up post-test scores among all participants across all facilities who completed all three tests

	N	Minimum	Maximum	Mean	Std. Deviation
POST	101	5	20	14.18	2.944
FOLLOW	83	5	20	13.55	3.194
Valid N (listwise)	83				

"Immediate Post-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -1.952; p-value 0.051

Table 19 represents the results of an evaluation of the program by all participants who completed the follow up post-testing and other data collection forms. A six-point Likert scale, ranging from 0-5, was utilized to evaluate the program a minimum of one month after the presentation. The overall results ranged from 0-5 (mean: 4.55; SD: 0.8; median: 5).

Table 19. Program evaluation at follow up, all participants across all facilities

	ITEM 1	ITEM 2	ITEM 3	ITEM 4	ITEM 5
MEAN	4.31	4.23	4.18	4.12	4.03
SD	0.77	0.85	0.97	1.05	1.11
MEDIAN	4	4	4	4	4

Total evaluation score: mean 4.17; SD 0.96; median 4.0

1.) This program was easy to understand.
2.) This program increased my understanding of the topic.
3.) I have used this information in my day-to-day work.
4.) This information has helped me care for the residents better.
5.) I would recommend this program to be used in the future.

3.4.4.5 Results of target audience across all facilities: follow up testing

For the RCAs across all facilities (the target audience), a total of 37 participants completed all three tests: pre-test (range 5-17; mean: 10.98; SD: 2.598), immediate post-test (range 5-20; mean: 14.06; SD: 3.131) and follow up post-test (range 7-19; mean: 13.62; SD: 2.802). As seen

in Table 20, improvement was noted among the three scores (Chi-square 21.394; df 2; *p*-value 0.000). Table 21 and Table 22, respectively, present the improvement between the pre-test and the immediate post-test (*n*=45; *Z*-score -4.467; *p*-value 0.000) and the pre-test compared to the follow up post-test (*n*=37; *Z*-score -3.327; *p*-value 0.001). The comparison between the immediate post-test to the follow up post-test (*n*=37; *Z*-score -1.474; *p*-value 0.140) can be seen in Table 23.

Table 20. Comparison of pre-test, immediate post-test and follow up post-test scores of all RCAs across all facilities who took all three tests

	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FOLLOW UP TEST	RAW CHANGE PRE-TEST	PERCENT CHANGE PRE-TEST	RAW CHANGE POST-TEST	PERCENT CHANGE POST-TEST
MEAN	10.92	49.63	14.46	65.72	3.54	16.09	13.62	2.7	12.29	-0.84	-3.81
SD	2.77	12.6	2.66	12.1	3.76	17.09	2.8	4.14	18.8	4.03	18.32
MEDIAN	11	50	14	63.64	4	18.18	14	3	13.64	-1	-4.55

"Pre-test," "Post-test," "Follow up test" and "Raw Change" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Chi-square 21.394; df 2; *p*-value 0.000

Table 21. Comparison of pre-test and immediate post-test scores of all RCAs across facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	45	5	17	10.98	2.598
POST	47	5	20	14.06	3.131
Valid N (listwise)	45				

"Pre-test" and "Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with *Z*-score -4.467; *p*-value 0.000

Table 22. Comparison of pre-test and follow up post-test scores of all RCAs across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	45	5	17	10.98	2.598
FOLLOW	37	7	19	13.62	2.802
Valid N (listwise)	37				

"Pre-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -3.327; p-value 0.001

Table 23. Comparison of immediate post-test and follow up post-test scores of all RCAs across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
POST	47	5	20	14.06	3.131
FOLLOW	37	7	19	13.62	2.802
Valid N (listwise)	37				

"Immediate Post-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -1.474; p-value 0.140

Because both the test and the program are newly developed, i.e., have no history or past analyses, an effect size was calculated to further analyze the potential impact the educational program likely had. The effect size for the change in scores from pre-test to immediate post-test for the RCAs was determined to be 1.28, and from pre-test to follow up post-test was determined to be 0.97.

3.4.4.6 Results of all other participant groups across all facilities: follow up testing

Licensed Practical Nurses/Registered Nurses

For RNs/LPNs, six individuals completed all three tests, as shown in Table 24 (Chi-square 7.000; df 2; p-value 0.030). The comparison of pre-test (range 8-16; mean: 10.000; SD: 2.966) to the immediate post-test (n = 6; range 13-18; mean: 15.70; SD: 2.359), can be found in Table 25 (Z-score -2.003; p-value 0.045). Comparing the pre-test to the follow up post-test

99

(range 10-16; mean: 12.70, SD: 2.584), as seen in Table 26, there is a slight change in scores noted (Z-score -1.156; *p*-value .248). The *n* for the comparison of immediate post-test to the follow up post-test was 10 (range 10-16; mean: 12.70; SD: 2.584), with a decline in scores as noted in Table 27 (Z-score -2.324; *p*-value 0.020).

Table 24. Comparison of pre-test, immediate post-test and follow up post-test of all LPNs/RNs across all facilities

	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FOLLOW UP TEST	PERCENT CORRECT	RAW CHANGE PRE-TEST	PERCENT CHANGE PRE-TEST	RAW CHANGE POST-TEST
MEAN	10	45.45	15.17	68.94	5.17	23.48	11.33	51.52	1.33	6.06	-3.83
SD	2.97	13.48	2.4	10.92	4.62	21.01	2.34	10.63	4.23	19.21	2.64
MEDIAN	9	40.91	15	68.18	6	27.27	10.5	47.73	1.5	6.82	-3

"Pre-test," "Post-test," "Follow up test" and "Raw Change" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Chi-square 7.000; df 2; *p*-value 0.030

Table 25. Comparison of pre-test and immediate post-test scores of all LPNs/RNs across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	6	8	16	10.00	2.966
POST	10	13	18	15.70	2.359
Valid N (listwise)	6				

"Pre-test" and "Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -2.003; *p*-value 0.045

Table 26. Comparison of pre-test and follow up post-test scores of all LPNs/RNs across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	6	8	16	10.00	2.966
FOLLOW	10	10	16	12.70	2.584
Valid N (listwise)	6				

"Pre-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -1.156; *p*-value 0.248

Table 27. Comparison of immediate post-test and follow up post-test scores of all LPNs/RNs across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
POST	10	13	18	15.70	2.359
FOLLOW	10	10	16	12.70	2.584
Valid N (listwise)	10				

"Immediate Post-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -2.324; p-value 0.020

Nursing

A number of participants identified themselves generically as "nursing." Based on the descriptive data of the participants, this group included RCAs and LPNs/RNs. A total of nine participants completed all three test iterations (pre-test $n=9$, range 9-19, mean: 13.00, SD: 3.000; immediate post-test $n=13$, range 12-19, mean: 15.69, SD: 2.136; follow up post-test $n=9$, range 12-20, mean: 16.00, SD: 2.345). Analysis of the three test administrations identified changes among the scores, as seen in Table 28 ($n=9$, Chi-square 8.629; df 2; p-value 0.013). Table 29 shows the change between pre-test and immediate post-test scores ($n=9$, Z-score -1.841; p-value 0.066), with Table 30 showing the increase in scores from the pre-test to the follow up post-test ($n=9$, Z-score -2.30; p-value 0.020). The difference between the immediate post-test scores and follow up post-test scores can be found in Table 31 ($n=9$, Z-score 0.000; p-value 1.000).

101

Table 28. Comparison among pre-test, immediate post-test and follow up post-test scores among all participants identified as "Nursing" across all facilities

	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FOLLOW UP POST-TEST	PERCENT CORRECT	RAW CHANGE PRE-TEST	PERCENT CHANGE PRE-TEST	RAW CHANGE POST-TEST	PERCENT CHANGE POST TEST
MEAN	13	59.09	16	72.73	3	13.64	16	72.73	3	13.64	0	0
SD	3	13.64	2	9.09	4.03	18.32	2.35	10.66	3	13.64	2.83	12.86
MEDIAN	13	59.09	16	72.73	4	18.18	16	72.73	3	13.64	1	4.55

"Pre-test," "Post-test," "Follow up test" and "Raw Change" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Chi-square 8.629; df 2; *p*-value 0.013

Table 29. Comparison between pre-test and immediate post-test among all participants identified as "Nursing" across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	9	9	19	13.00	3.000
POST	13	12	19	15.69	2.136
Valid N (listwise)	9				

"Pre-test" and "Immediate Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with *Z*-score -1.841; *p*-value 0.066

Table 30. Comparison between pre-test and follow up post-test scores among all participants identified as "Nursing" across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	9	9	19	13.00	3.000
FOLLOW	9	12	20	16.00	2.345
Valid N (listwise)	9				

"Pre-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with *Z*-score -2.320; *p*-value 0.020

Table 31. Comparison between immediate post-test and follow up post-test scores among all participants identified as "Nursing" across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
POST	13	12	19	15.69	2.136
FOLLOW	9	12	20	16.00	2.345
Valid N (listwise)	9				

"Immediate Post-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score 0.000; *p*-value 1.000

Housekeeping

Nine individuals who identified as "housekeeping" completed all three tests. The Friedman test was used to analyze the comparisons among the pre-test (range 3-15; mean: 9.10; SD: 4.149), the immediate post-test (range 9-16; mean: 12.56; SD: 2.455), and the follow up post-test (range 6-20; mean: 13.90; SD: 4.358), shown in Table 32 (Chi-square 5.515; df 2; *p*-value 0.063). Table 33 represents an increase from the pre-test to the immediate post-test scores (*n*=9; Z-score -2.309; *p*-value 0.021). An improvement was also noted in the pre-test/follow up post-test comparison (*n*=10; Z-score -2.398; *p*-value 0.016), as demonstrated in Table 34. Comparing the immediate post-test to the follow up post-test (*n*=9; Z-score -1.103; *p*-value 0.270) indicated a slight decline in scores, as illustrated in Table 35.

Table 32. Comparison of pre-test, immediate post-test and follow up post-test scores of all housekeepers across all facilities

FORM	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FOLLOW UP POST-TEST	RAW CHANGE PRE-TEST	PERCENT CHANGE PRE-TEST	RAW CHANGE POST-TEST	PERCENT CHANGE POST-TEST
MEAN	9.1	41.36	12.56	57.07	3.78	17.17	13.9	4.8	21.82	2.6	11.82
SD	4.15	18.86	2.46	11.16	3.53	16.03	4.36	4.47	20.31	5.64	25.64
MEDIAN	10	45.45	13	59.09	6	27.27	13.5	5.5	25	1	4.55

"Pre-test," "Post-test," "Follow up test" and "Raw Change" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Chi-square 5.515; df 2; *p*-value 0.063

Table 33. Comparison between pre-test and immediate post-test scores of housekeepers across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	10	3	15	9.10	4.149
POST	9	9	16	12.56	2.455
Valid N (listwise)	9				

"Pre-test" and "Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -2.309; *p*-value 0.021

Table 34. Comparison between pre-test and follow up post-test scores of housekeepers across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	10	3	15	9.10	4.149
FOLLOW	10	6	20	13.90	4.358
Valid N (listwise)	10				

"Pre-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -2.398; *p*-value 0.016

Table 35. Comparison of immediate post-test scores and follow up post-test scores of housekeepers across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
POST	9	9	16	12.56	2.455
FOLLOW	10	6	20	13.90	4.358
Valid N (listwise)	9				

"Post-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -1.103; *p*-value 0.270

Non-caregiving staff

Non-caregiving staff were analyzed as a separate group. The *n* at pre-test was 44; at immediate post-test, 35; and at follow up testing, 27. Thus, the *n* for comparison among all three test iterations was 27. Analysis indicated a change among all three test administrations (Chi-square 12.356; df 2; *p*-value 0.002), as can be observed in Table 36. Table 37 shows an improvement in immediate post-test scores compared to pre-test scores (*n*=35; Z-score -4.104; *p*-

value 0.000). An increase was noted between the follow up post-test compared to the pre-test (*n*=27; *Z*-score -2.963; *p*-value 0.003)*,* as seen in Table 38. A slight decline in scores, shown in Table 39, was noted between the immediate post-test scores and the follow up post-test scores (*n*=27; *Z*-score -0.373; *p*-value 0.709).

Table 36. Comparison among pre-test, immediate post-test and follow up post-test scores for all non-caregivers across all facilities

	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FOLLOW UP POST-TEST	RAW CHANGE PRE-TEST	PERCENT CHANGE PRE-TEST	RAW CHANGE POST-TEST	PERCENT CHANGE POST-TEST
MEAN	10.36	47.11	13.46	61.17	3.66	16.62	12.96	3.07	13.97	0	0
SD	3.09	14.04	2.79	12.68	3.94	17.91	3.82	4.58	20.83	4.11	18.7
MEDIAN	11	50	14	63.64	3	13.64	13	3	13.64	1	4.55

"Pre-test," "Post-test," "Follow up test" and "Raw Change" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Chi-square 12.356; df 2; *p*-value 0.002

Table 37. Comparison between pre-test and immediate post-test scores of non-caregivers across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	44	3	15	10.36	3.089
POST	35	7	19	13.46	2.790
Valid N (listwise)	35				

"Pre-test" and "Immediate Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with *Z*-score -4.104; *p*-value 0.000

Table 38. Comparison between pre-test and follow up post-test scores of non-caregivers across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	44	3	15	10.36	3.089
FOLLOW	27	5	20	12.96	3.818
Valid N (listwise)	27				

"Pre-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with *Z*-score -2.963; *p*-value 0.003

Table 39. Comparison between immediate post-test and follow up post-test scores for non-caregivers across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
POST	35	7	19	13.46	2.790
FOLLOW	27	5	20	12.96	3.818
Valid N (listwise)	27				

"Immediate Post-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -0.373; p-value 0.709

Group without identifiers

Lastly, a number of participants who did not provide any identifier were analyzed "unidentified." These individuals potentially came from any of the above groups, and later test scores could not be connected to earlier test scores for direct comparison. Fourteen participants completed all three tests under this category (pre-test n=22, immediate post-test n=14, follow up post-test n=14). Analysis of the scores of the three tests indicated an increase in scores among the various iterations, as noted in Table 40 (n=22, Chi-square 4.148; df 2; p-value 0.126). Table 41 shows an improvement between the pre-test and the immediate post-test (n=14, Z-score -2.612; p-value 0.009). In Table 42, a similar increase can be seen between the pre-test and the follow up post-test (n=14, Z-score -1.808; p-value 0.071). Analysis of the difference between the immediate post-test scores and the follow up post-test scores showed a slight decline, as demonstrated in Table 43 (n=14, Z-score -1.228; p-value 0.219).

Table 40. Comparison among pre-test, immediate post-test and follow up post-test scores for unidentified participants across all facilities

	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	FOLLOW UP POST-TEST	PERCENT CORRECT
MEAN	10.23	46.49	13.64	62.01	11.71	53.25
SD	3.07	13.95	3.08	13.99	4.03	18.31
MEDIAN	9.5	43.18	14	63.64	11	50

"Pre-test," "Post-test" and "Follow up test" are all given in points out of 22 total possible points. Comparative statistics of raw scores only, with Chi-square 4.148; df 2; *p*-value 0.126. Because test scores could not be matched, it was not possible to determine raw score changes nor percent changes

Table 41. Comparison between pre-test and immediate post-test scores for unidentified participants across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	22	5	15	10.23	3.070
POST-TEST	14	7	18	13.64	3.079
Valid N (listwise)	14				

"Pre-test" and "Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with *Z*-score -2.612; *p*-value 0.009

.

Table 42. Comparison between pre-test and follow up post-test scores for "unidentified" participants across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	22	5	15	10.23	3.070
FOLLOW UP POST-TEST	14	5	19	11.71	4.027
Valid N (listwise)	14				

"Pre-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with *Z*-score -1.808; *p*-value 0.071

Table 43. Comparison between immediate post-test and follow up post-test scores for "undentified" participants across all facilities

	N	Minimum	Maximum	Mean	Std. Deviation
POST-TEST	14	7	18	13.64	3.079
FOLLOW UP POST-TEST	14	5	19	11.71	4.027
Valid N (listwise)	14				

"Post-test" and "Follow up Post-test" are given in points out of 22 total possible points. Comparative statistics of raw scores only, with Z-score -1.228; p-value 0.219

3.4.5 Discussion/Limitations

Initially, 120 individuals began the training, participating in the initial collection of descriptive demographic information, and most participating in the pre-test (although some started the pre-test late, while others were interrupted and had to leave before completion), by the immediate post-test, only 98 individuals across the facilities completed the post-test. Because there were no identifiers on the demographic forms, there is no way to tell which individuals specifically (age, gender, race, etc.) did not complete the post-test. Appendix D does contain specific information about the jobs of the individuals who completed the pre-test versus those who completed the immediate post-test. Most did not complete because they needed to leave to begin their shift, or needed to leave for other reasons (documented below). Some seemed to choose not to complete the remainder of the exams and post-presentation evaluation (audible comments similar to "I'm not going to do this" were noted; in other cases, only the first lines of the forms were filled in, and the remainder left blank, before the participant put the forms in their envelopes).

In doing the preliminary analyses, two facilities did stand out: Facility 2 and Facility 6. In both cases, impediments to a smooth presentation were present, as described below in the discussion. In Facility 2, due to a number of reasons described below, the program ran over time.

Although a large number started the program, only a few remained after the program to do the post-test. In Facility 6, the participants actually did worse on the post-test. Numerous issues affected programming at that facility.

When comparing the pre-test scores to the immediate post-test scores, although the performance varied somewhat by group, virtually all groups in all combinations of analyses demonstrated statistically significant improvement of the post-test over the pre-test. The n of some of the groupings, however, was sometimes quite small. Thus, caution must be used when attempting to extrapolate information about a given group. Nonetheless, using the WSRT to compare scores on immediate post-tests to those on pre-tests resulted in p-values below the significance level set at 0.05, indicating that the change in scores was unlikely due to chance. When all the participants' scores were compared, and when the scores of the target audience was compared, the resulting p-values were 0.000, strongly suggesting that the changes in scores were not likely due to chance, and in this case, most likely due to the educational program presented.

For the entire group who took all three tests, the results of the Friedman test indicate a statistically significant difference among the three test iterations (Chi-square 46.949; df 2; p-value 0.000). To determine more specifically where the differences lie, the WSRT was utilized to compare specific differences in scores between test administrations. The comparison between the pre-test and immediate post-test showed a significant improvement in test scores after the educational program (Z-score -6.915; p-value 0.000). In other words, the change in scores from the pre-test to the immediate post-test show a statistically significant increase, which is highly unlikely due to chance, indicating that a change in knowledge occurred from the pre-test to the immediate post-test. Comparing the pre-test and follow up post-test scores also demonstrated a significant improvement in test scores following the educational program, despite the passage of

time (Z-score -4.989; p-value 0.000). This indicates that, again, it is highly unlikely that the change in scores was due to chance. Instead, it appears that the participants retained the knowledge over time, i.e., that learning (a relatively permanent change in knowledge)[304-305] has occurred A comparison of the immediate post-test scores and the follow up post-test scores indicated a slight decline (Z-score -1.952; p-value 0.051), approaching but not quite achieving statistical significance. It is not surprising that some information would not be retained in detail over time. However, this minimal change does not meet the established level for significance, indicating that this change is slight, and may even be the result of chance. These data, taken together, suggest that an increase in knowledge, as measured by the tests, occurred most likely as a result of the educational program, and that this increase in knowledge remained relatively stable over time.

For the RCAs across all facilities (the target audience), a statistically significant improvement was found among the three scores (Chi-square 21.394; df 2; p-value 0.000), strongly suggesting that it is unlikely that the observed changes were due to chance. A statistically significant improvement was noted between the pre-test and the immediate post-test (Z-score -4.467; p-value 0.000) and the pre-test compared to the follow up post-test (n=37; Z-score -3.327; p-value 0.001). Comparing the immediate post-test to the follow up post-test (Z-score -1.474; p-value 0.140), a slight decline in scores was noted, however, this decline is statistically insignificant. As discussed with the results of the entire group, these statistics taken together suggest the RCAs improved on both post-tests after the presentation, suggesting that learning[304-305] had occurred. Despite a slight decline over time, as indicated by the insignificant decrease in immediate post-test compared to follow up post-test scores, their knowledge retention remained relatively stable. The strength of these results is further supported by the

effect sizes noted between the test administrations. Both effect sizes represented approximately one standard deviation or more, and both were greater than 0.80, which is considered to represent a large change,[306] suggesting that the change in scores noted was due to the effect of the educational program.

The results for the other groups analyzed are generally similar; however the n for some of the groups may be too small, limiting inferences that may be drawn. For RNs/LPNs, six individuals completed all three tests. The results of the Friedman test indicated a significant improvement occurred among the three test iterations (Chi-square 7.000; df 2; *p*-value 0.030). Analyzing the data further, the pre-test (*n*=6, range 8-16; mean 10.000; SD 2.966) compared to the immediate post-test (*n*=10; range 13-18; mean 15.70; SD 2.359), a slight, but statistically significant improvement was noted (Z-score -2.003; *p*-value 0.045). Comparing the pre-test to the follow up post-test (*n*=10, range 10-16; mean 12.70, SD 2.584), six participants could be compared, and the change in scores was not found to be significant (Z-score -1.156; *p*-value .248). The *n* for the comparison of immediate post-test to the follow up post-test was 10 (range 10-16; mean 12.70; SD 2.584) using the WSRT demonstrates a statistically significant decline in scores (Z-score -2.324; *p*-value 0.020). The *n* for the final comparison, while still somewhat small, was 40% higher than the *n* for the pre-test/immediate post-test comparison, quite possibly affecting results.

Based on the descriptive data of the participants, a group of participants identified only as "nursing" included RCAs and LPNs/RNs. A total of nine participants in this group completed all three test iterations (pre-test *n*=9, immediate post-test *n*=13, follow up post-test *n*=9). The Friedman test indicated the presence of statistically significant changes among the test administrations (*n*=9, Chi-square 8.629; df 2; *p*-value 0.013), however this test does not specify

where the change(s) occurred. More specific analysis of inter-test scores reveal the change between the pre-test scores compared to the immediate post-test scores approaches but does not meet statistical significance (n=9, Z-score -1.841; p-value 0.066). The difference between the pre-test and the follow up post-test is statistically significant, however (n=9, Z-score -2.30; p-value 0.020). The difference between the immediate post-test scores and follow up post-test scores lacked statistical significance (n=9, Z-score 0.000; p-value 1.000). While the comparison of the pre-test to the follow up post-test scores, and that of the immediate post-test to the follow up post-test scores is consistent with findings in other groups, that of the pre-test to immediate post-test is not. There may be several explanations for this. At some of the facilities, particularly Facility 2, individuals were in a hurry to return to work or to leave after the program, thus some may have rushed through the post-test and answered incompletely or incorrectly due to time constraints. For the follow up post-test, they were able to take their time and potentially consider answers more carefully. The participants that were available for comparison between the pre-test and immediate post-test may be slightly different than the sample for the pre-test to follow up post-test. The n is small, regardless of the test comparison, potentially affecting results. Lastly, it may be that the participants were able to use and practice the content from the time of the presentation to the follow up test, and thus may have internalized the concepts better after using them in practice.

As described previously, housekeepers were analyzed as a separate group, as well as with the group of non-caregiving staff. As described, housekeepers tend to be in a position to observe and interact with the residents, as well as observe and interact with the environment around the residents. Housekeepers were not included in the original hypothesis, as this program was developed primarily for RCAs, however, since some facility administrators included

112

housekeepers in the educational program, the opportunity to look at this group presented itself. Although the number was limited, housekeepers demonstrated statistically significant improvement from the pre-test to the immediate post-test, and retained this improvement from the pre-test to the follow up test, with only a slight, statistically insignificant decline in scores from immediate post-test to follow up post-test. These findings suggest that their change in scores was unlikely due to chance, and that the apparent knowledge gained from the presentation remained fairly stable over time. Based on this small sample, and based on the unique position of housekeepers within an ALF/PCH, it would seem prudent to include this group in future training sessions on this topic.

The comparisons among the participants in the remaining groups – non-caregivers and unidentified – were similar to the overall findings. Improvement was noted from the pre-tests to the two post-tests, both immediate and follow up, indicating that an increase in knowledge regarding fall risk in residents and fall prevention occurred and remained relatively stable over time.

The results of this study indicate that the educational program provided to the staff at these facilities resulted in increased awareness and understanding of some of the factors related to fall risk and fall prevention in ALFs/PCHs. The program was developed primarily for RCAs in this setting. Assisted living facilities and personal care homes are increasingly becoming an optional living arrangements for older adults who are unable to remain in their homes.[20, 22, 123, 307] Unlike nursing homes, which are federally regulated,[22, 27, 30] there are minimal federal regulations for ALFs/PCHs, so each state has its own set of regulations. Prior to 2011, there was no difference in the definitions of ALFs versus PCHs in the state of Pennsylvania.[19] In 2011, new definitions were developed that differentiated between the two, with some differences in services

provided, as well as some architectural differences.[19] As a result of these changes, some facilities previously referred to as ALFs were reclassified as PCHs, and vice versa.

Despite the changes in definition, the hiring requirements and the population served in each setting remain essentially unchanged, although the ALF setting does allow "aging in place," i.e., as a person deteriorates due to illness or age, s/he may continue to remain in an ALF with supportive care (including hospice), but not in a PCH.[19] As a result, both settings were included in this study. In Pennsylvania, administrators and/or owners of ALFs/PCHs must go through an educational program and pass a certification exam,[19] however the remainder of the staff have few requirements to be hired. A high school diploma or equivalent is all that is required to be hired to provide care in these settings in Pennsylvania.[19] Not all states even require a high school education.[19] Once hired, however, staff in these settings are required to have a minimum of 12 hours a year of inservice training.[19] "Med techs," i.e., medication technicians or medication aides are required to have additional training and certification to distribute medications, and all RCAs must go through training on diabetes care. Because of the minimal requirements to care for residents in ALFs/PCHs, the American Gerontological Society (AGS) published a position statement stressing minimal information that the AGS felt all RCAs should be provided to best provide care.[123] Fall prevention was among the areas recommended by the AGS.[123]

To this end, this educational program was developed primarily to be presented to RCAs. There is very little in the literature regarding training the non-professional caregiver in these settings, thus there was very little guidance as to successful or unsuccessful educational programs. As a result, the researchers went through a variety of steps to attempt to develop a program that would be successful. Literature on falls, educational theory, and test development

were reviewed. To determine the content to be included in this program, observations in these settings were done on various shifts, and experts were surveyed according to the Delphi Method. To refine the test being developed, cognitive interviews were completed with non-professional caregiving staff to identify any ambiguous questions or confusing wording on the tests.

Once the program was developed, it was presented at a total of six local PCHs and ALFs. When the study was presented to the administrators, it was stressed that it was primarily for RCAs, but that other non-professional staff (housekeeping, activities, possibly dining room staff) who have exposure to or interaction with the residents may participate also. The consideration for their inclusion was that such staff, provided with knowledge of falls risk factors and fall prevention techniques, would be able to act on the environment and/or provide information to professional staff should any risks be observed. It was stressed that RNs and LPNs should not be included, as their training is such that the benefit of the program may be limited, and their data would be confounding. It was believed that nurses would do better on the pre-tests and show little benefit on the post-tests, as the information would not be new to them. It was also believed that their feedback on the program would differ from that of the non-professional staff, as the information would be familiar and too basic for them.

The two outcome measures were results on post-tests (immediate post-program, and a minimum of six weeks post) compared to pre-test scores, as well as feedback provided by the participants on a Likert scale. The intention was to develop and test a program in "real-life" situations. More precise data collection could have been achieved had the researchers recruited participants to come to a controlled setting several times for testing and an uninterrupted presentation provided on time. However, some of the limitations of the study arose from identifying issues related to presenting and testing the information within the actual settings.

Despite some of the problems that arose, testing within the actual facilities showed that the program could withstand the challenges and was successful, based both on test results and participant feedback. Fall reduction was not used as an outcome for a variety of reasons, including that differences among the facilities and their residents alone would affect the number of falls. The level of acuity of the residents may differ from facility to facility, and even from time to time within the same facility. As a result, at any given time, a facility may have residents who are more prone to fall than at other times when the population may be different. Furthermore, the architectural layout of some of the facilities was such that their baseline number of falls was already low. Despite a baseline number of falls being low, preventing individual falls is still a priority in these facilities, however it makes it difficult to use frequency of falls as an outcome measure.

All groups of participants, including RNs and LPNs, showed improvement from the pre-test to the post-test following the presentation. The *n* for some of the groups was quite small, so even though statistical improvement was found in each group, the information for a given group may not be generalizable, and may even vary with a larger *n*. Nonetheless, the consistency of the trend across all groups to show improvement is strongly supportive that members of all departments that interact with the residents and their environment would benefit from this presentation. Several of the facilities included employees from departments that have no exposure to the residents. For the few who completed both the pre-test and post-test, improvement in scores was evident, however that does not mean that these departments should be included in this particular educational program. One such category was kitchen staff. They have little to no interactions with the residents, and are not in a position to readily observe and remark on the environment in which the residents live. These participants, based on audible

verbal comments, and apparently on their feedback forms, saw little value in this presentation and its impact on how they would do their day to day job. It is the opinion of this researcher that, for this group, they are probably correct. With little to no interaction with the residents and/or the residents' environment, this group would likely have little impact on falls.

One issue that potentially affected the strength of the data and statistical analyses for the groups was the inconsistency and/or inaccuracy of including assigned number and job title on the test forms. The grouping of "nursing" included both RCAs and licensed nurses, for instance. Had these tests been properly marked, the *n* for both groups would have increased. Eleven data points identified as "nursing" were analyzed on their own, which resulted in a rather small group itself, and prevented inclusion in the proper groups, which would have strengthened the statistical analyses of each group. The 13 tests that had no identifying marks also created a rather small group for analysis on its own, and prevented the other groups from having their full contingent for analysis. Various issues are described by individual facilities below, but a situation that arose on a number of occasions was the presentation running overtime, potentially resulting rushed answers. Some questions required lists, and these may have been less thoroughly answered due to pressure to complete the exam quickly, and other questions may have been answered in a hurried, less careful manner. Based on individual facility statistics (Appendix D), those with time issues appeared to have more errors on the post-tests and a smaller number of post-tests being completed (Facilities 2 and 6, primarily). This is conjecture, however, as it is difficult to ascertain why some performed worse on the post-test, and there is also no way to know if other individuals felt time constraints for other reasons.

There were a number of extraneous circumstances that impacted the data collection for this study. Some were facility-specific, and some were similar from facility to facility. All of

these circumstances were very illuminating, however, and provided information to make any future presentations stronger. Early on, it became apparent that some of the content could be combined or eliminated to make the presentation more concise. For instance, in the brief introductory lecture, both some issues related to flooring and to seating were discussed. It was perceived this was necessary to provide the participants with some tools to begin to make some judgments with while playing the game. Both this idea and the content were reviewed by an educational expert (ER), and reviewed and revised repeatedly by the PI/presenter, a certified Geriatric Clinical Specialist through the American Physical Therapy Association with extensive experience in working with older adults, including in ALFs/PCHs, and both teaching falls risk/falls prevention to various groups, as well as addressing such problems with patients. Nonetheless, when actually presenting the material decided upon, it became apparent that some of the content could have been addressed sufficiently in the game alone. Discussion after questions relating to these topics would have been sufficient to address both issues. Such changes would have shortened the program to an easier to administer time frame. The program, from start to finish, ran 55 minutes, including testing and filling out other forms. This time frame was fine for facilities and participants as long as everything ran on time. However, as described below, that was not always the case, thus a shorter program would have been more accommodating to any deviations from a strict schedule. Although this was recognized early on, no changes were made to maintain the integrity of the study.

In general, the program, as is, worked better in smaller groups than in larger groups (although size was not the only factor). It was more difficult to start on time with larger groups: larger groups often had more difficulty seeing the projected images, and generally required more repetition, thus increasing the length of time of the presentations. Frequently, with the larger

groups, there appeared to be more problems with responses registering with the TurningPoint Technologies® program. It was often necessary for respondents to press their "clickers" multiple times in order for all responses to register, and in some cases, responses were never recorded. It is unclear if this was an issue with the participants, with the "clickers," or if perhaps the receivers (distance from the receiver due to a larger group, too much information at one time, or some other issue). Regardless, when these problems arose with the technology, it prolonged the entire program. Initially, participants read the test questions on their own, reviewed the images and made their selections. It quickly became apparent that participants read at different paces, which tended to frustrate everyone. Those who read faster displayed impatience while waiting for others to complete their questions, and those who read slower displayed frustration at a perception of being rushed. The PI/presenter began reading each of the questions that required use of images in PowerPoint® for all to view, and the questions that were fully written out were completed individually. Although this problem affected all groups, it was more attenuated in larger groups, in which there was often a greater difference between the faster individuals and the slower individuals. Lastly, in larger groups, there tended to be more discussion among participants as they answered test questions. Some inadvertently shouted out an occasional response, and then quickly apologized. Others discussed their answers before making a decision. This was a difficult situation to handle, as it was not up to the presenter to "police" the actions of the participants as she might in a classroom of her students.

Two presentations were done at Facility 1. During the first presentation, there was an error on the part of the presenter. On the copies of the pre-test, the PI neglected to eliminate the words "CORRECT ANSWER" by the correct responses of three of the questions. This potentially inflated the participants' scores on the pre-test, thus possibly demonstrating less

improvement from before the presentation to after. Nonetheless, one participant still answered one of those questions incorrectly, despite the label, and despite a discussion by the group that those three questions had the correct answers identified. Another issue that arose was related to the technology. Two of the plastic numbers covering the buttons on one of the clickers came off, and another nearly came off. The buttons were intact, but then apparently only worked intermittently. The participants' responses were not always recorded on the first attempt. It is difficult to say for certain if this was due to the respondents' use of the clickers, or due to the damaged clickers. When the PI checked the clickers before and after the presentation, there was no problem, but to be certain they didn't interfere, those clickers were removed from usage for the vast majority of the presentations. They were only used in extremely large groups, after all other clickers were distributed. They definitely worked at least some of the time, as they always registered initially. With almost every presentation, however, there were times when responses were not recorded, even with these particular clickers not in use.

The second session at this facility brought its own challenges. In the time since the first presentation, the heads of other departments decided to include their employees in the program. As a result, the time changed for the presentation. Some of the participants arrived a few minutes early for the original time, and waited quite a while until the whole group arrived and the presentation began. Due to the delay in starting time, several individuals had to leave to begin their shift or to catch a final bus to get home. Also, the room was quite small for the now larger group. Not everyone could see the images projected, despite a number of them moving to try and get a better look. The lights in the room were either all on, or all off; there was no way to partially dim the lights or partially brighten the room. The images had to be projected onto a wall, which dulled the contrast of the images. Because of the time of year (late November), and

the time of day, it began getting dark outside during the presentation. It was impossible to see the projected images with the lights on, however it was extremely difficult for participants to read the questions on the post-tests by the time they were to be completed. One other issue affected the presentation. One of the participants required constant instruction and repetition to participate. She was extremely hard of hearing, but appeared to have other deficits as well. She was unable to keep up with the rest of the group, yet it was difficult to slow things down much more to accommodate her needs. One person seemed to have assumed responsibility for her, trying to keep her on task. Nonetheless, her needs further slowed down the program, and at times she interrupted by loudly saying, "I don't understand what we are doing!"

The presentation was mandatory for all departments at the second facility. The location was a relatively small common area with very little seating. The facility did provide a screen on which the images could be projected, which greatly enhanced the visual quality of the images. Participants began arriving shortly after the presentation was due to begin, and they continued to arrive steadily over the next 20-25 minutes. As they arrived, each needed to be instructed to sign in and be provided with materials. Space and seating needed to be located as well. The program did not begin until almost 30 minutes after it was initially scheduled, and then with numerous interruptions. Individuals had to sit around a corner and into a hallway, out of view of the screen. Participants had their "walkie-talkies" on full volume, and the presentation was frequently interrupted by pages to different individuals. Ultimately, the presentation ended over an hour and a half after it had begun. Numerous participants left to start their shifts, or to go home. Of those who did stay until the end, even fewer stayed to complete the post-test and the evaluation form. Although the presenter explained the benefits of having various departments participate, even those who are not related directly to resident care but who had the opportunity

to observe residents, the presenter could overhear comments questioning the importance of their presence at this meeting. Several participants from the kitchen staff left at the instruction of their supervisor so they could begin work, with the supervisor appearing, by expression and tone, to question the necessity of their presence.

The presentation at Facility 3 was non-mandatory, but recommended for all departments. It was a very large group, eventually reaching >30 individuals. The room for the presentation was quite large, with adequate chairs for everyone around a table. The vast majority of the participants arrived early or on time, with only a few coming in after the program had started. The administrator and staff coordinator assisted in providing them with instructions and paperwork. Several in the group asked questions during the presentation. On occasion, all of the responses during the game were not recorded. Despite the large group, and even with the questions and occasional delays due to the technology problems, the program ran very close to on time, largely due to the ability to start on time. Many participants stayed after to talk to the presenter, some with additional questions, some expressing both gratitude and praise for the presentation. Participants helped to organize all of the paperwork, and assisted the presenter with clean up. These behaviors were very different than those observed at the facilities in which the educational program was mandatory.

Facility 4 made the presentation mandatory for caregiving staff. The room was well-set up for a meeting, but somewhat difficult to present in. There were few electrical outlets, and very little wall space to project upon. The presenter consistently had a screen available for just such a situation, but in this room, it was difficult to position the projector and the screen in such a way that the projections were viewable in a large enough image for the details to be viewable, and even for the screen to be seen by all. The images were thus projected onto a wall, but the

architecture of the room made it difficult for the projection to be visible to all. Nonetheless, the staff stayed with the program, asking questions when they were unclear about a projection. The program did run over-time somewhat, due to a later start time (late arrivals) and occasional problems with the technology, and a resident who repeatedly entered the room, resulting in brief delays throughout the presentation. The staff appeared to be accepting of the longer presentation. As described above, however, revising some of the presentation could decrease the amount of time necessary, and thus minimize the impact of unexpected delays such as occurred here.

Four different presentations were done at Facility 5. It was mandatory for resident care staff to attend one of the four. The first presentation was a morning presentation. It got started a little late, due to late arrivals coming off of their shifts. The presenter made an error with the audio speakers for the presentation, but that was quickly fixed. Other than that, the presentation went off without any significant difficulties. The staff expressed appreciation, as well as surprise at some of the information provided. The afternoon presentation both started off and ended up a little differently than the morning. The presentation was to begin at 2:00, and the presenter had been told to expect approximately 20 participants. At 2:15, no one had arrived. The presenter began to assume she had the time wrong, however when she found staff to ask, it was to begin at 2:00. After the presenter began looking for participants, they began arriving. The presentation started late, with additional people coming in partway through and delaying things further. As a result, the presentation ended quite late. At one point, another caregiver who was working with the residents came in and rather angrily stated she needed one of the participants "on the floor;" it was well past that participant's 3:00 starting time for her shift.

The 3rd presentation, scheduled to start at 7:00 AM, started late due to the presenter who was delayed due to the rapid onset of bad weather. The staff came together very quickly once the presenter had arrived, and the presenter got them started on their paperwork while she set up. The program started a little more than 15 minutes late, but during that time, the presenter did the introduction and had the demographic information completed by the participants, so the delay was not as great as it had seemed. The participants seemed to divide into two groups, both in their arrangement in the room, and in their engagement in the presentation. There was a table of three younger participants, and one of three older participants. The younger ones could be heard commenting during the presentation, while the older ones asked questions; the younger ones appeared to be more in a hurry to have the presentation completed, while the older ones took their time to understand the content. There were one or two issues that arose with the technology, however the presenter moved on quickly to the next question rather than wait for the technology to catch up. The presentation ended slightly late, and the younger table did seem anxious about the delay, hurrying to finish their tests and Likert scales; the older table took their time. It was unclear who, if anyone, was starting their shift after the presentation. At least two of the younger ones were leaving the facility.

The final presentation at this facility was similar to the first afternoon. The presenter was set up well in advance, and at 2:00 PM, no one had arrived yet. The program began late and ended late, as before, with mixed responses from the participants, however the presenter was better at keeping things moving along, despite the tardiness of all the participants, some more than others. The program lasted almost exactly 55 minutes from start (as had the others at this facility), but technically ended approximately 15 minutes late. The attitudes varied among the participants. Most were very gracious and expressed interest in the topic, and even in the

124

presenter. Others, however, made it rather clear that they were experiencing some displeasure over a mandatory meeting. Other than the delay in time, most aspects of this iteration of the presentation were good. The only problem was that the window blinds, previously easily opened and closed, were stuck in an open position in virtually every floor to ceiling window, creating glare which dimmed the images being projected. This ended up being something of a significant problem, resulting in the presenter needing to describe the images at times. Once the sun dropped a little lower in the sky, the situation improved somewhat, however the glare remained something of an issue throughout the presentation. There was the occasional technological glitch with the TurningPoint® program, but the presenter moved through it quickly.

Facility 6 was the only facility that was not part of the local medical system. It was the only privately owned facility, and also the only one in which the caregivers are also cooks, servers and housekeepers. There had been several attempts to schedule. When the day finally came, the presenter received a phone call from the administrator/owner that she had forgotten to mention it to staff. The presenter suggested re-scheduling altogether, however the administrator suggested that the program start at 2:30 instead of 2:00 PM. In a phone conversation several minutes later, she changed the time to 2:45. The presenter arrived, and was directed to the only dining room to set up for the presentation. There were four participants, all of whom were working at the time. They came in and got settled for the program a little before 3:00 PM. The presenter was ready to begin, and the participants began filling out their paperwork. The presenter attempted to give instructions, but quickly learned that one of the participants was extremely hard of hearing. One of the other participants instructed her loudly and slowly through every step. She needed instructions repeated multiple times (for instance, "answer the questions on this form" needed to be explained step by step to her by another employee). The

presenter needed to repeat each question in the pre-test a minimum of 2 times (despite the questions being written down), sometimes more, for this participant. This significantly increased the amount of time to simply complete the test. Other than needing to repeat the content from the brief introduction several times, loudly and slowly, that section went smoothly. The TurningPoint® presentation had been opened and ready to go prior to starting the program, however when an attempt was made to begin the program, it "froze" and wouldn't do anything. The software was very slow in closing and restarting. This was very unfortunate, as the educational program had already started nearly an hour after originally scheduled, and was taking a very long time to go through due to the multiple repetitions. In addition, a resident would frequently come to the door of the dining room and look in. This aggravated one of the participants, who repeatedly and brusquely would get up and move the resident from the doorway. This interruption occurred a minimum of five times, resulting in increased agitation on the part of the employee, and further delay of the program. When it came time for the post-test, the participants audibly stated they didn't know the answers, and these looked like the same questions. Because the presentation was in the dining room, and because the staff were also the kitchen staff, by the time the presentation was finished, the staff were hurried and stressed about getting tables set and supper ready for the residents. This was by far the most difficult presentation to get through. The presenter offered to help set tables, or assist in any other way possible, but the staff declined. A second presentation for the night shift had been scheduled, but the administrator left a message via text for the presenter that she needed to post-pone it. After several interactions and attempts to re-schedule, the administrator stated that none of her night staff would be able to stay for the program, so it was simply cancelled.

Two other local facilities had been scheduled for presentations. One was re-scheduled due to bad weather (most of the staff take a bus or walk, and the administrator did not want to ask them to come out in the bad weather). Shortly before the new date, the administrator contacted the primary research to re-schedule yet again, as her diabetic teaching was scheduled for the date she had offered, and the State of Pennsylvania does not permit that session to be re-scheduled. An attempt to schedule a 3rd time was made, however, it could not be done in time for this study. The other facility was very enthusiastic, but had to cancel due to a "crisis" that had arisen that needed addressing right away. The next available time was also too late to participate in this study. At the request of the administrator, however, the PI will provide her staff with the training program once this study is completed.

To summarize, the content of the program seemed to be somewhat novel and overall well-received. The educational program can be made more concise. This would be beneficial, as the presentations cannot always start on time. From a research standpoint, it was difficult to collect all the data necessary, as some individuals came in too late to complete the pre-test, and could only complete the post-test. Conversely, some were present for the pre-test but had to leave prior to post-test to start their shifts or catch their transportation. As a result, data points are missing. The best presentation, both in attendance and in reception, was one that was open to all departments, but that was not mandatory. Those which were mandatory were met with more mixed results from the participants – in timeliness, attention, performance and program rating. Smaller groups, in general, worked better, however this was not always the case. The best program was also the largest, and one of the most challenging was also one of the smallest. Using the TurningPoint Technologies® clicker system, when it worked, it was very well-received. The participants laughed and seemed to enjoy the game aspect and the immediate

feedback provided. It had been hoped that it would be possible to utilize the data from the clickers to compare participation and responses from the learners to performance on their tests, however this was not possible. The inconsistency of recordings limited the usefulness of the information. Furthermore, due to a malfunction of the program, saving any information from Facility 6 was not possible. In the larger groups, it was more difficult to make sure the clicker numbers corresponded with the sign in numbers, and lastly, participants exchanged clickers at different times. If someone had to leave early or leave temporarily, the participant often gave his/her clicker to another participant to use to vote. This did not come to the presenter's attention until the end of these particular presentations. Some participants and administrators stated that the technology improved both the enjoyment and attention of the participants. However, the technology also created some problems at times, as it was somewhat inconsistent.

The follow up post-testing brought its own unique set of challenges. As described above, it was difficult to get the follow up post-tests completed and returned. The PI needed to contact each facility multiple times, such that the follow up tests were completed at vastly different intervals, both among facilities and within the same facility. Some tests were completed approximately six weeks post-presentation, while others were not completed for a minimum of three months post-presentation. Within the same facility, some were completed anywhere from approximately six weeks to nine weeks. There is no way to know whether the participants completed their post-tests on their own, or if they combined efforts – some individual follow up test results were 7 points or more higher than the immediate post-test. Many of the participants did not include their job or their assigned number on their forms. Conversely, some participants ONLY completed their number or job title, and did not fill out any of the other information or complete the tests. As mentioned above, the assigned numbers frequently did not correspond

128

with the numbers from the day of presentation. This made it extremely difficult to compare changes in scores over time, as well as decreased the n of several of the groups, as unidentified or poorly identified tests could not be properly sorted by job title – they became groups of their own. Another issue that appeared to influence follow up testing was the print out of the pictures. Although they appeared to be clear, from some comments written on the exam sheets, it seems that some participants were having difficult seeing the pictures clearly. Lastly, the instructions to circle only one answer for the multiple choice questions was not written at the top (although the individual questions did state to choose the BEST answer). On the follow up tests, a number of individuals circled more than one answer – these were marked as incorrect.

There were a number of issues about this study that were not as precise as one would like for research purposes. Most of these have been described in detail above. Nonetheless, the information gathered from this study provided valuable insight into ways to make the program better, as well as to continue the research to refine the data. First, the presentation works better in small groups, thus it would be better to present the program multiple times to capture various shifts in smaller groups than once with a large group. Participants are better able to attend to the instructions and to the program in smaller groups. A portion of the "background" information can be eliminated to make the program more concise. Rather than leaving the post-tests for everyone to complete and the administrator to manage, the PI could choose a couple of times (with the administrators' help) to be present during staff's shifts and help with the data collection. Tests could be left behind for a small number of individuals who work night shift or on shifts other than when the PI is available. This would make the process more efficient and precise, and minimize the burden on the administrators. There was no funding for this project, so the PI purchased food and gifts for the participants. Gifts were given after the presentation, and

left for the participants for after they completed their follow up post-tests. The gifts were approximately $1/each from a variety of stores. Some of the follow up gifts did not seem to be desired by the participants. Either funding or help from administrators (since this program benefits them by fulfilling state inservice requirements, as well as providing safety information) may help to produce more desirable gifts to encourage participants to complete the follow up forms. And, including a broader variety of types of PCH/ALFs would provide additional information to further help refine the program.

Despite the limitations and occasional difficulties that arose during this study, in nearly every type of analysis done, statistical improvement was found in pre-test versus the post-test scores. Although the Likert scores were generally lower on the follow up data collection, the majority of individuals indicated that the program had had an impact on how they manage their residents on a day to day basis. By all measures, the program appears to have been successful, and with some revisions, could be much better. Interest has already been expressed to the PI to present this inservice at additional facilities, once the study has been completed.

APPENDIX A

PROGRAM DEVELOPMENT – PERSONAL CARE HOME OBSERVATIONS

This appendix contains all of the information and data for the steps of the study leading up to the development of the educational program.

A.1   FORMS

This section contains the forms used for the PCH observations.

A.1.1   Frequency of Observation form

This is a sample of the form used to count the observed issues/incidents that could contribute to falls, as observed at 2 local PCHs over all three shifts.

FREQUENCY OF OBSERVATIONS

Name of Assisted Living Facility:

Date of observation:

Shift observed: 7-3   3-11 11-7

ENVIRONMENTAL ISSUES:

Spills/unmarked wet areas:

Obstacles:

Flooring:

Furniture:

Other (describe):

RESIDENT ISSUES:

Footwear:

Inappropriate or inadequate use of assistive device:

Poor positioning:

Poor safety (describe):

Incontinence:

Agitation:

Other (describe):

STAFF ISSUES:

Staff unavailable:

Communication (describe):

Other (describe):

A.1.2 Frequency of Observation form – Operational Definitions

In this subsection, a description is provided of what the researcher was looking for under each section while observing the PCHs. A count was kept of each instance, along with descriptive information when necessary. These items/issues are based on the literature related to fall risk, as well as the researcher's experience with this population and in this setting. Please see the notation at the end of the document for further explanation. In some instances, an observation was made that was not anticipated in the original operational definitions, and a descriptive notation of the issue or event was noted in the appropriate area.

FREQUENCY OF OBSERVATIONS

(Descriptions in italics of areas of concern to be noted)

Name of Personal Care Home:

Date of observation:

Shift observed: 7-3   3-11   11-7

ENVIRONMENTAL ISSUES:

Spills/unmarked wet areas:

- *Any wet areas on floor that are in an area where residents may walk, that are not wiped up promptly, or at minimum, not marked with "Wet Floor Sign" or cone, or are not blocked off to prevent resident from walking in that area. Any wet spots that pose a risk to residents, and are not addressed promptly by staff.*

Obstacles:

- *Any objects that interfere with safe walking paths*

Flooring:

- *Thick carpet (>1/2" thickness, including padding)*
- *Uneven flooring*
- *Torn or damaged flooring that could contribute to a tripping hazard*
- *Lips at door jams or junctions between carpet and other flooring surface that could create tripping hazard*
- *Throw rugs or non-secure bathroom rugs*

Furniture:

- *Damaged or unsafe/unstable furniture*

Wheelchairs:

- *Damaged wheelchairs, non-functional parts*
- *Ill-fitting wheelchairs*
- *Unsafe alterations to wheelchair (eg., resident piles belongings into wheelchair, creating poor positioning in wheelchair)*

Lighting:

- *Inadequate lighting in areas utilized by residents*

Other (describe):

- *Issues not covered by above (grab-bars, shower stalls, toilets, hand-rails along walls, etc.)*

RESIDENT ISSUES:

Footwear:

- *Optimal footwear has been described as secured to the foot, supportive uppers, no thick treads, non-skid thin to medium thickness soles, well-fitting, heel cup*
- *Any footwear other than the above would be considered a safety issue and noted (bare foot, socks, terry cloth "footies" with "non-skid" treatments, ill-fitting, backless, non-supportive slippers/non-traction bottoms. etc.)*

Inappropriate or inadequate use of assistive device:

- *Improper height*
- *Not using assistive device if needed (i.e., does not have one)*
- *Using assistive device improperly*
- *Not using correct assistive device*
- *Assistive device in poor repair*
- *Other items affecting safety (eg., loading assistive device with personal items, etc.)*

Poor positioning:

- *Unsafe positioning in bed or on furniture; excludes wheelchair positioning*

Poor safety (describe):

- *Resident does not use assigned assistive device, leaves it places/forgets assistive device*
- *Any unsafe, poor decisions or lack of awareness on part of resident*

Incontinence:

- *Fecal or urinary incontinence as observed by researcher*

Agitation:

- *Includes agitation/aggressive behaviors, as well as restlessness/wandering*

Other (describe):

- *Behaviors/situations that don't fit into above categories*
- *Issues that could contribute to falls, such as clothing too long/too big, not using prescribed oxygen, etc.*

STAFF ISSUES:

Staff unavailable:

- *Primarily noted if staff n/a when a resident has a need, but will also be noted if no staff available for extended period of time (>15 minutes)*

Communication (describe):

- *Ineffective instructions, interactions that contribute to agitation, raising voice to resident (i.e., in anger or frustration, not to facilitate hearing)*
- *Non-verbal communications that can contribute to misunderstanding of instructions or increase agitation*

Other (describe):

- *Any issues that don't fit into the above categories, such as unsafe guarding, not correcting resident for unsafe activities/forgetting assistive device, sleeping on the job if not permitted, etc.*

All frequency counts are based only on the researcher's observations and may not be complete. Issues that occurred outside of the view of the researcher could not be noted, therefore counts may not be exact. For instance, episodes of incontinence counted were only those that were be observed; others may have occurred that were only apparent in the residents' rooms or bathroom. If no issues of a particular situation existed, then those were designated as "NO ISSUES." For issues that may have occurred outside the view of the researcher, "NO ISSUES OBSERVED" was documented. For example, if the floors throughout the facility presented no safety hazard, that was documented as "NO ISSUES," as the situation was assessed and determined not to be a risk. If no episodes of incontinence were observed, that was documented as "NO ISSUES OBSERVED," as instances of incontinence may have occurred, but may not have been witnessed.

A.1.3 Facility Description form

This is a sample of the form provided to the administrators/owners of the PCHs where the observations were conducted, with a request for the administrators/owners to please complete.

FACILITY DESCRIPTION

In order to allow better analysis of data, please take a few moments to fill in the following information regarding your facility. Thank you very much.

DEMOGRAPHICS

1.) How many beds do you have?

2.) How many residents to you typically have?

3.) How many are men vs. women?

4.) Approximately what age range are your residents?

STAFFING

1.) How many total employees do you have?

2.) How many are direct caregivers?

3.) What is the approximate education level of your direct caregivers?

4.) What is the approximate racial/ethnic distribution of your direct caregivers?

5.) How many men vs. women are direct caregivers?

6.) Do you staff according to a typical 7-3, 3-11, 11-7 format, or do you use different staffing patterns? If you use different staffing patterns, please briefly describe how you staff and why you do it this way.

7.) How many caregivers are assigned per shift? How has this been determined?

8.) Are caregivers on night shift permitted to sleep?

9.) Are there particular requirements for staffing supervision (i.e., is there the expectation that a staff member will be available on the floor at all times?...)

10.) Do you staff with RN's or LPN's and how is this supervision scheduled?

A.1.4 Form for Interview with PCH Administrator/Owner

This is a sample of the form used to obtain more in depth information about the facility, its training needs, fall issues and its practices.

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INTERVIEW WITH PCH ADMINISTRATORS

TRAINING

1.) What kind of training and/or orientation is each direct caregiver given when first starting his/her job?

2.) What kind of ongoing training/inservicing does the staff receive?

3.) Do all staff members participate in ongoing training, or is that limited to direct caregivers?

4.) What do you feel your inservice needs are?

5.) Do you feel that inservicing has an impact on resident care?

6.) What do you feel makes one inservice more successful than another, if anything?

7.) What do you feel are barriers, if any, to information presented in inservices being carried over into direct caregiving?

8.) Are inservices mandatory? How is this managed?

FALLS

1.) Approximately how many resident falls to you have in a 3 month period?

2.) Do you track falls in any formal manner?

3.) Can you identify any causes for the falls that have been observed (ex, slippery floor, residents not using prescribed assistive devices, etc.)?

4.) Do you have a formal or informal program for addressing falls?   Please describe.

5.) Do you currently have any training for your staff regarding falls prevention?

GENERAL

1.) Please describe the philosophy of this assisted living facility.

2.) Please describe the ownership/management of this assisted living facility.

3.) Is there anything else you would like to comment on regarding this assisted living facility?

A.2 PERSONAL CARE HOME OBSERVATIONS – DESCRIPTIVE INFORMATION

This section contains the information provided by the PCH administrators.

A.2.1 Facility Observations: Characteristics of Personal Care Homes

This section contains the data describing each of the 2 PCHs, based on the responses of the facility administrators.

CHARACTERISTICS OF PERSONAL CARE HOMES

CHARACTERISTICS	PCH 1	PCH 2
Number of beds	75	42
Number of residents (typical)	60	35
Resident gender	Males 35% Females 65%	Males 34% Females 66%
Approximate age range of residents	45- 96 years	
Total number of employees	20	10
Number of direct caregivers (CG)	15	10
Approximate level of education of CG	High School Diploma or GED	High School
Approximate CG racial/ethnic distribution	8 White 12African-American	10 White
Gender of staff	Males 2 Females 13	Males 0 Females 10
Staffing schedule	Typical 7-3, 3-11, 11-7 shifts	Typical 7-3, 3-11, 11-7 shifts
Determinant of number of CG per shift	Variable based on census	Determined by number of mobile vs. immobile residents
Typical staffing pattern	7-3 shift: 3-4 CG 3-11 shift: 3-4 CG 11-7 shift: 2-3 CG	7-3 shift: 2 CG 3-11 shift: 2 CG 11-7 shift: 2 CG
Sleeping permitted on night shift	NO	NO
Staff available on floor at all times	YES, 24 hour waking staff	YES
Special training	Certified Medication Aides; Certified in Diabetic Care	Diabetic Training
Other training	Approximately 24 hours per year on "relevant issues;" all trained in CPR and First Aid	First Aid/CPR; 12 add'l hrs on a variety of topics
Use of RN or LPN	RN Administrator on 24 hour call; Charge Aide supervises when Administrator out of building	None

CG=Caregivers

Note: Terminology of administrators transcribed as written, ex, PCH 1 reported under "Special Training," PCH1 administrator wrote "Certified in Diabetic Care," PCH 2 administrator wrote "Diabetic Training;" PCH 1 administrator specified education level as "High School Diploma or GED" (i.e., General Educational Development test); PCH 2 administrator specified "High School"

A.2.2 Responses to Questionnaire for PCH Administrators

Initially, it was planned to interview each administrator face to face, however the administrators were unable to set aside time to do so. As a result, each administrator filled out the interview forms on their own, with no opportunity for follow-up questions. This appendix includes the responses of each administrator.

INTERVIEW WITH PCH 1 ADMINISTRATOR

TRAINING

1.) What kind of training and/or orientation is each direct caregiver given when first starting his/her job?

They are supervised until testing is completed. They have to pass competencies and skills/knowledge tests.

2.) What kind of ongoing training/inservicing does the staff receive?

Some examples: Immobility, fire awareness (mandatory), regulations (mandatory), residents' rights (mandatory), managing congestive heart failure, emergency response, policy and procedure reviews, cardiopulmonary resuscitation/first aid, among others. Mandatory indicates those topics which are mandated by state regulations.

3.) Do all staff members participate in ongoing training, or is that limited to direct caregivers?

All staff required for all but med and diabetic training. Addendum: medication training and diabetic training is for some staff as identified by administrator.

4.) What do you feel your inservice needs are?

That is decided based off of need and ARL requirements. Note: Administrator wrote ARL, however the correct acronym is ALR for Assisted Living Residence requirements.

5.) Do you feel that inservicing has an impact on resident care?

Yes. The staff are more aware; see different changes in staff awareness/behaviors. Sometimes unhappy with outside presenters.

6.) What do you feel makes one inservice more successful than another, if anything?

Staff buy in & visual aides are beneficial. Different teaching techniques due to different learning styles, i.e., movies, poster, hands on.

7.) What do you feel are barriers, if any, to information presented in inservices being carried over into direct caregiving?

Staff buy in. They (staff) need to get what & why we are presenting the info. & see the benefits of it. Otherwise, staff tends to be non-compliant.

8.) Are inservices mandatory? How is this managed?

Yes, they are mandatory. We hold are [sic] *meetings 1 hour before pay is released.*

FALLS

1.) Approximately how many resident falls to you have in a 3 month period?
>   *3.*

2.) Do you track falls in any formal manner?
>   *No, but we are discussing potential tracking systems.*

3.) Can you identify any causes for the falls that have been observed (ex, slippery floor, <u>residents not using prescribed assistive devices</u>, etc.)?
>   (Note: Administrator underlined "residents not using prescribed assistive devices" on form) *& confusion.*

4.) Do you have a formal or informal program for addressing falls?   Please describe.
>   *Yes we use the "Falling Star Program"*

5.) Do you currently have any training for your staff regarding falls prevention?
>   *Yes – annually & during orientation*

GENERAL

1.) Please describe the philosophy of this facility.
>   *To provide quality care for residents @ an affordable price. We strive to create a nurturing environment that makes our staff & residents feel part of the family.*

2.) Please describe the ownership/management of this facility.
>   *Small and family owned.*

3.) Is there anything else you would like to comment on regarding facility?
>   (no response)

INTERVIEW WITH PCH 2 ADMINISTRATOR

TRAINING

1.) What kind of training and/or orientation is each direct caregiver given when first starting his/her job?

>*Overview of facility, rooms, residents, fire safety, fire drill procedure. Locations of all Important valves (sprinkle, water) electric boxes, etc. Job description for each shift, facility policies.*

2.) What kind of ongoing training/inservicing does the staff receive?

>*Each staff has first aid/CPR, diabetic training, 12 hrs. inservice on range of subjects.*

3.) Do all staff members participate in ongoing training, or is that limited to direct caregivers?

>*All.*
>
>Note: In this PCH, caregiving staff are also the housekeepers, cooks and kitchen staff.

4.) What do you feel your inservice needs are?

>*Reviews on dementia, MH, dealing with different personalities.*
>
>Note: MH = mental health

5.) Do you feel that inservicing has an impact on resident care?

>*Yes*

6.) What do you feel makes one inservice more successful than another, if anything?

>*Subject and way.*

7.) What do you feel are barriers, if any, to information presented in inservices being carried over into direct caregiving?

>(no response)

8.) Are inservices mandatory? How is this managed?

>*Yes*

FALLS

1.) Approximately how many resident falls to you have in a 3 month period?
> *6 is our average fall number. Usually it is one resident that* [sic] *falls at least twice because something medical is going on.*

2.) Do you track falls in any formal manner?
> *Yes*

3.) Can you identify any causes for the falls that have been observed (ex, slippery floor, residents not using prescribed assistive devices, etc.)?
> *I find generally if it is not something medical, it seems residents or* [sic] *either moving too fast or careless*

4.) Do you have a formal or informal program for addressing falls?   Please describe.
> *We have to address to the state when & who I look at why* [sic] *– if it is a situation caused by oxygen lines, position of furniture we attempt to correct it* [sic]*. If I find I have a chronic faller we do ask them to leave because their safety is a factor.*

5.) Do you currently have any training for your staff regarding falls prevention?
> *In-service*

GENERAL

1.) Please describe the philosophy of this facility.
> *To provide daily assistance in varied areas to a resident. Also, offer support, encouragement and assurance. To make them feel usful* [sic] *and an important part of their enviornment.*[sic]

2.) Please describe the ownership/management of this assisted living facility.
> *To oversee all facets of the business and primarily to observe staff and make sure each resident is receiving proper car* [sic] *& support not just from us but from family* [sic]

Note: This facility is a single, family-run personal care home.

3.) Is there anything else you would like to comment on regarding this assisted living facility?
> (no response)

A.3   PERSONAL CARE HOME OBSERVATIONS -- DATA

This section contains the forms used for the PCH observations, as well as the data, both raw and analyzed.

A.3.1   Frequency of Observation Results for PCH 1.

This subsection contains the raw data from the observations on all three shifts at PCH 1.   The results are preceded by a review of the operational definitions for the observations.

FREQUENCY OF OBSERVATIONS

OPERATIONAL DEFINITIONS REVIEWED

(Descriptions in italics of areas of concern to be noted)

Name of Personal Care Home:

Date of observation:

Shift observed: 7-3   3-11   11-7

ENVIRONMENTAL ISSUES:

Spills/unmarked wet areas:

- *Any wet areas on floor that are in an area where residents may walk, that are not wiped up promptly, or at minimum, not marked with "Wet Floor Sign" or cone, or are not blocked off to prevent resident from walking in that area. Any wet spots that pose a risk to residents, and are not addressed promptly by staff.*

Obstacles:

- *Any objects that interfere with safe walking paths*

Flooring:

- *Thick carpet (>1/2" thickness, including padding)*
- *Uneven flooring*
- *Torn or damaged flooring that could contribute to a tripping hazard*
- *Lips at door jams or junctions between carpet and other flooring surface that could create tripping hazard*
- *Throw rugs or non-secure bathroom rugs*

Furniture:

- *Damaged or unsafe/unstable furniture*

Wheelchairs:

- *Damaged wheelchairs, non-functional parts*
- *Ill-fitting wheelchairs*
- *Unsafe alterations to wheelchair (eg., resident piles belongings into wheelchair, creating poor positioning in wheelchair)*

Lighting:

- *Inadequate lighting in areas utilized by residents*

Other (describe):

- *Issues not covered by above (grab-bars, shower stalls, toilets, hand-rails along walls, etc.)*

RESIDENT ISSUES:

Footwear:

- *Optimal footwear has been described as secured to the foot, supportive uppers, no thick treads, non-skid thin to medium thickness soles, well-fitting, heel cup*
- *Any footwear other than the above would be considered a safety issue and noted (bare foot, socks, terry cloth "footies" with "non-skid" treatments, ill-fitting, backless, non-supportive slippers/non-traction bottoms. etc.)*

Inappropriate or inadequate use of assistive device:

- *Improper height*
- *Not using assistive device if needed (i.e., does not have one)*
- *Using assistive device improperly*
- *Not using correct assistive device*
- *Assistive device in poor repair*
- *Other items affecting safety (eg., loading assistive device with personal items, etc.)*

Poor positioning:

- *Unsafe positioning in bed or on furniture; excludes wheelchair positioning*

Poor safety (describe):

- *Resident does not use assigned assistive device, leaves it places/forgets assistive device*
- *Any unsafe, poor decisions or lack of awareness on part of resident*

Incontinence:

- *Fecal or urinary incontinence as observed by researcher*

Agitation:

- *Includes agitation/aggressive behaviors, as well as restlessness/wandering*

Other (describe):

- *Behaviors/situations that don't fit into above categories*
- *Issues that could contribute to falls, such as clothing too long/too big, not using prescribed oxygen, etc.*

STAFF ISSUES:

Staff unavailable:

- *Primarily noted if staff n/a when a resident has a need, but will also be noted if no staff available for extended period of time (≥15 minutes)*

Communication (describe):

- *Ineffective instructions, interactions that contribute to agitation, raising voice to resident (i.e., in anger or frustration, not to facilitate hearing)*
- *Non-verbal communications that can contribute to misunderstanding of instructions or increase agitation*

Other (describe):

- *Any issues that don't fit into the above categories, such as unsafe guarding, not correcting resident for unsafe activities/forgetting assistive device, sleeping on the job if not permitted, etc.*

All frequency counts are based only on the researcher's observations and may not be complete. Issues that occurred outside of the view of the researcher could not be noted, therefore counts may not be exact. For instance, episodes of incontinence counted were only those that were be observed; others may have occurred that were only apparent in the residents' rooms or bathroom. If no issues of a particular situation existed, then those were designated as "NO ISSUES." For issues that may have occurred outside the view of the researcher, "NO ISSUES OBSERVED" was documented. For example, if the floors throughout the facility presented no safety hazard, that was documented as "NO ISSUES," as the situation was assessed and determined not to be a risk. If no episodes of incontinence were observed, that was documented as "NO ISSUES OBSERVED," as instances of incontinence may have occurred, but may not have been witnessed.

Table 44. Personal care home 1: observation results

CONTRIBUTING FACTORS	7 – 3 SHIFT	3 – 11 SHIFT	11 – 7 SHIFT
ENVIRONMENTAL			
SPILLS/UNMARKED WET AREAS	1 SMALL SPILL AFTER LUNCH, STAFF WIPED UP IN ~ 15 MIN	NO ISSUES	DOWNSTAIRS WET FOOTPRINTS MARKED WITH WET FLOOR SIGN; UPSTAIRS LONGER TRAIL UNMARKED, STAFF AWARE BUT DID NOT WIPE UP
OBSTACLES	3 RESIDENT ROOMS CLUTTERED	1 RESIDENT'S ROOM VERY CLUTTERED WITH LITTLE ROOM FOR WALKING	UPSTAIRS TRASH BAG ON FLOOR IN HALL SIMILAR IN COLOR TO FLOOR/HALL FOR ABOUT 45 MINUTES
FLOORING	NO ISSUES	NO ISSUES	NO ISSUES
FURNITURE	7 CHAIRS NOT PUSHED UNDER TABLES AFTER LUNCH, LIMITING WALKING AREA	NO ISSUES	UPSTAIRS NUMEROUS CHAIRS NOT PUSHED IN AFTER BREAKFAST (AFTER SHIFT CHANGE)
WHEELCHAIRS	1 WHEELCHAIR TOO HIGH FOR FOOT PROPULSION	NO ISSUES	NO ISSUES
LIGHTING	NO ISSUES	NO ISSUES – UPSTAIRS COMMON AREAS (eg, TV LOUNGE) DARKENED, BUT HALLWAYS WHERE RESIDENTS WALK WELL-LIT	NO ISSUES
OTHER	3 HALLS, NO HANDRAILS; 1 LOOSE GRAB-BAR IN WOMEN'S SHOWER; 1 SHOWER W/O GRAB-BAR; 3 SHOWERS WOULD BENEFIT FROM 2ND GRAB-BAR	SAME AS WITH 7-3 SHIFT; NO OTHER ISSUES	SAME AS WITH 7-3 SHIFT; NO OTHER ISSUES

W/O = WITHOUT

Table 44. (continued)

RESIDENT ISSUES			
FOOTWEAR (see Table 45 for additional details)	16 RESIDENTS WITH UNSAFE FOOTWEAR	13 RESIDENTS WITH INAPPROPRIATE FOOTWEAR	22 RESIDENTS WITH INAPPROPRIATE FOOTWEAR
INAPPROPRIATE/INADEQUATE USE OF ASSISTIVE DEVICE (see Table 46 for additional details)	18 RESIDENTS WITH ISSUES RELATED TO ASSISTIVE DEVICE USE	7 RESIDENTS WITH ISSUES RELATED TO ASSISTIVE DEVICE USE	8 ISSUES WITH RESIDENTS (OVERLAP 11-7 TO 7-3)
POOR POSITIONING	1 RESIDENT SLEEPING CLOSE TO EDGE OF BED	NO ISSUES	4 RESIDENTS SLOUCHED ASLEEP IN MOVEABLE DINING ROOM CHAIRS, UNSECURED
POOR SAFETY	2 RESIDENTS LEFT AD TO CARRY PLATE TO GET MORE FOOD (UNSTEADY, STAFF DID NOT CORRECT); 1 RESIDENT LEFT CANE TO WALK TO CHAIR; 2 RESIDENTS LEFT WALKERS BEHIND	AGITATED RESIDENT LOST WALKER, STAFF RECOGNIZED AND BEGAN LOOKING FOR RIGHT AWAY, HOWEVER RESIDENT NOT INSTRUCTED TO SIT UNTIL WALKER FOUND	1 RESIDENT LEFT WHEELED WALKER IN ROOM, STAFF ASSISTED RESIDENT TO ROOM TO RETRIEVE (SAFER TO HAVE RESIDENT SIT WHILE STAFF RETRIEVES AD)
INCONTINENCE (OBVIOUS)	1 URINARY	NO OBVIOUS ISSUES	1 FECAL
AGITATION	4 RESIDENT EPISODES, 1 VERY PROLONGED (LASTED APPROXIMATELY 60 MINUTES OF OBSERVATION TIME, ?? RESOLUTION AS RESIDENT THEN OUT OF OBSERVATION AREA)	1 RESIDENT FLUCTUATING, INCREASING AND DECREASING THROUGHOUT OBSERVATION TIME, APPROXIMATELY 90 MINUTES	NO ISSUES

Table 44. (continued)

OTHER	1 AMBULATORY RESIDENT IN ROOM FAR FROM DINING ROOM, LEANS ON ELBOW ON WALKER AND OBVIOUSLY FATIGUED; 5 RESIDENTS WITH PANTS TOO LONG; 1 RESIDENT WITH PANTS FALLING DOWN, TOO LONG, CROTCH TOO LOW	4 RESIDENTS WITH PANTS TOO LONG; 1 RESIDENT TO USE O_2 AT ALL TIMES, NOT USING WHILE WALKING AND THROUGHOUT EVENING	1 RESIDENT WITH O_2 ORDERED AT ALL TIMES WALKING WITHOUT IT, STAFF REMINDED HER; 6 RESIDENTS WITH PANTS TOO LONG
STAFF ISSUE			
STAFF UNAVAILABLE	AFTER CHANGE OF SHIFT, NO STAFF ON 2ND FLOOR WHILE PT. HAVING ?? PETIT MAL SEIZURE	NO ISSUES	NO ISSUES
COMMUNICATION	1 STAFF RAISED VOICE @ RESIDENT, CAUSING HIM TO BECOME AGITATED; STAFF CONT'D LATER, RESULTING IN INCREASED AGITATION AND RESIDENT LEAVING WALKER BEHIND	NO ISSUES	3 EPISODES OF RAISING VOICE AT ONE RESIDENT; 1 EPISODE OF STERN PHYSICAL CONTACT WHILE SPEAKING LOUDLY TO GET RESIDENT'S ATTENTION
OTHER	1 STAFF DID NOT CORRECT UNSTEADY RESIDENT LEAVING WALKER BEHIND TO CARRY PLATE FOR 2ND HELPING OF FOOD	NO ISSUES	1 STAFF FELL ASLEEP IN NRSG. STATION (BASED ON POSITION, APPARENTLY BY ACCIDENT), BUT EASILY AROUSED

Table 45. Observed unsafe footwear: specifics

FOOTWEAR STYLE	7-3 SHIFT	3-11 SHIFT	11-7 SHIFT
"NON-SLIP FOOTIES"	2		1
RUNNING SHOES	1, VELCRO UNDONE	1 WITH UNSECURED HIGH TOPS, TOO LARGE	1 WITH UNSECURED HIGH TOPS, TOO LARGE
BALLET-TYPE SLIPPERS	1		
BACKLESS SLIPPERS	4	2, ALSO TOO LARGE	6
SHOES TOO LARGE	4	3	3
SHOES WORN LIKE BACKLESS SLIPPERS (i.e., RESIDENT WALKING ON BACK OF SHOE)	1, RUNNING SHOES	1, RUNNING SHOES	2, RUNNING SHOES
BACKLESS PLASTIC CLOG	1		1, TOO LARGE
SLIPPERS (WITHOUT SUPPORT, WITHOUT TRACTION ON BOTTOMS)	2	3	2 (1 TOO LARGE)
REGULAR SOCKS		3	3
BARE FEET			1
"DRESS" SHOES			1 MALE SLIP-ON; 1 FEMALE SLIP-ON, TOO BIG

Table 46. Observed inadequate/inappropriate use of assistive devices: specifics

ACTION	7-3 SHIFT	3-11 SHIFT	11-7 SHIFT
PUSH WALKER TOO FAR IN FRONT	2		
AD TOO HIGH	6	1	3
AD TOO LOW			
TOO MANY BELONGINGS HANGING FROM WALKER	2	4	2 (1 WITH COAT HANGING FROM WHEELED WALKER ONTO FLOOR)
NOT USING AD, BUT WOULD BENEFIT FROM	4		2
OTHER	2 USING WHEELED WALKER WITH ONE HAND, CARRYING OBJECTS WITH OTHER	1 RESIDENT RELYING HEAVILY ON WHEELED WALKER, LEANING ON ONE ELBOW, STOPPING FREQUENTLY TO REST FROM ROOM TO DINING ROOM, BREATHING HEAVILY	1 RESIDENT RELYING HEAVILY ON WHEELED WALKER, LEANING ON ONE ELBOW, STOPPING FREQUENTLY TO REST FROM ROOM TO DINING ROOM, BREATHING HEAVILY

AD = ASSISTIVE DEVICE

A.3.2 Frequency of Observation Results for PCH 2.

This subsection contains the raw data from the observations on all three shifts at PCH 2.   The

results are preceded by a review of the operational definitions for the observations.

FREQUENCY OF OBSERVATIONS

OPERATIONAL DEFINITIONS REVIEWED

(Descriptions in italics of areas of concern to be noted)

Name of Personal Care Home:

Date of observation:

Shift observed: 7-3   3-11 11-7

ENVIRONMENTAL ISSUES:

Spills/unmarked wet areas:

- *Any wet areas on floor that are in an area where residents may walk, that are not wiped up promptly, or at minimum, not marked with "Wet Floor Sign" or cone, or are not blocked off to prevent resident from walking in that area. Any wet spots that pose a risk to residents, and are not addressed promptly by staff.*

Obstacles:

- *Any objects that interfere with safe walking paths*

Flooring:

- *Thick carpet (>1/2" thickness, including padding)*
- *Uneven flooring*
- *Torn or damaged flooring that could contribute to a tripping hazard*
- *Lips at door jams or junctions between carpet and other flooring surface that could create tripping hazard*
- *Throw rugs or non-secure bathroom rugs*

Furniture:

- *Damaged or unsafe/unstable furniture*

Wheelchairs:

- *Damaged wheelchairs, non-functional parts*
- *Ill-fitting wheelchairs*
- *Unsafe alterations to wheelchair (eg., resident piles belongings into wheelchair, creating poor positioning in wheelchair)*

Lighting:

- *Inadequate lighting in areas utilized by residents*

Other (describe):

- *Issues not covered by above (grab-bars, shower stalls, toilets, hand-rails along walls, etc.)*

RESIDENT ISSUES:

Footwear:

- *Optimal footwear has been described as secured to the foot, supportive uppers, no thick treads, non-skid thin to medium thickness soles, well-fitting, heel cup*
- *Any footwear other than the above would be considered a safety issue and noted (bare foot, socks, terry cloth "footies" with "non-skid" treatments, ill-fitting, backless, non-supportive slippers/non-traction bottoms. etc.)*

Inappropriate or inadequate use of assistive device:

- *Improper height*
- *Not using assistive device if needed (i.e., does not have one)*
- *Using assistive device improperly*
- *Not using correct assistive device*
- *Assistive device in poor repair*
- *Other items affecting safety (eg., loading assistive device with personal items, etc.)*

Poor positioning:

- *Unsafe positioning in bed or on furniture; excludes wheelchair positioning*

Poor safety (describe):

- *Resident does not use assigned assistive device, leaves it places/forgets assistive device*
- *Any unsafe, poor decisions or lack of awareness on part of resident*

Incontinence:

- *Fecal or urinary incontinence as observed by researcher*

Agitation:

- *Includes agitation/aggressive behaviors, as well as restlessness/wandering*

Other (describe):

- *Behaviors/situations that don't fit into above categories*
- *Issues that could contribute to falls, such as clothing too long/too big, not using prescribed oxygen, etc.*

STAFF ISSUES:

Staff unavailable:

- *Primarily noted if staff n/a when a resident has a need, but will also be noted if no staff available for extended period of time (≥15 minutes)*

Communication (describe):

- *Ineffective instructions, interactions that contribute to agitation, raising voice to resident (i.e., in anger or frustration, not to facilitate hearing)*
- *Non-verbal communications that can contribute to misunderstanding of instructions or increase agitation*

Other (describe):

- *Any issues that don't fit into the above categories, such as unsafe guarding, not correcting resident for unsafe activities/forgetting assistive device, sleeping on the job if not permitted, etc.*

All frequency counts are based only on the researcher's observations and may not be complete. Issues that occurred outside of the view of the researcher could not be noted, therefore counts may not be exact. For instance, episodes of incontinence counted were only those that were be observed; others may have occurred that were only apparent in the residents' rooms or bathroom. If no issues of a particular situation existed, then those were designated as "NO ISSUES." For issues that may have occurred outside the view of the researcher, "NO ISSUES OBSERVED" was documented. For example, if the floors throughout the facility presented no safety hazard, that was documented as "NO ISSUES," as the situation was assessed and determined not to be a risk. If no episodes of incontinence were observed, that was documented as "NO ISSUES OBSERVED," as instances of incontinence may have occurred, but may not have been witnessed.

Table 47. Personal care home 2: observation results

CONTRIBUTING FACTORS	7 – 3 SHIFT	3 – 11 SHIFT	11 – 7 SHIFT
ENVIRONMENTAL			
SPILLS/UNMARKED WET AREAS	NO ISSUES	NO ISSUES	NO ISSUES
OBSTACLES	DINING ROOM CROWDED WITH CHAIRS, TABLES, WALKERS; OTHER ASSISTIVE DEVICES LEFT IN HALL AND RESIDENTS WALK IN W/O DEVICE (SOME "FURNITURE WALK")	SAME AS WITH 7 – 3 SHIFT	SAME AS WITH 7 – 3 SHIFT
FLOORING	NO ISSUES	NO ISSUES	NO ISSUES
FURNITURE	2 COUCH CUSHIONS STRETCHED, WITH EDGES AND CORNER EXTENDING BEYOND EDGE OF LOVESEAT, BENDING DOWNWARD	SAME AS WITH 7 – 3 SHIFT	SAME AS WITH 7 – 3 SHIFT
WHEELCHAIRS	NO ISSUES	NO ISSUES	NO ISSUES
LIGHTING	2 OF 4 HALLWAYS DARK	4 HALLWAYS DARK; 3 BATHROOMS DARK; 2 OBSERVED RESIDENTS' ROOMS DARK UPON RETURN FROM BATHROOM	4 HALLWAYS DARK; 3 BATHROOMS DARK; 2 OBSERVED RESIDENTS' ROOMS DARK UPON RETURN FROM BATHROOM
OTHER	NO ISSUES	NO ISSUES	SMOKING AREA OUTSIDE, UNCOVERED WOOD DECK, LAYER OF SNOW VISIBLE ON WOOD, DECK WITH GAPS BETWEEN WOOD, WOOD UNEVEN

Table 47. (continued)

RESIDENT ISSUES			
FOOTWEAR (see Table 48 for additional details)	16 RESIDENTS OBSERVED WITH UNSAFE FOOTWEAR (OVERLAPPED WITH 3-11 SHIFT)	8 RESIDENTS OBSERVED WITH UNSAFE FOOTWEAR	14 RESIDENTS OBSERVED WITH UNSAFE FOOTWEAR (OVERLAPPED WITH START OF 7-3 SHIFT)
INAPPROPRIATE/INADEQUATE USE OF ASSISTIVE DEVICE (see Table 49 for additional details)	11 RESIDENTS WITH ISSUES RELATED TO ASSISTIVE DEVICE USE	6 RESIDENTS WITH ISSUES RELATED TO ASSISTIVE DEVICE USE	15 RESIDENTS WITH ISSUES RELATED TO ASSISTIVE DEVICE USE
POOR POSITIONING	1 RESIDENT SLEEPING IN BED WITH LEGS OVER SIDE OF BED, FEET ON FLOOR	1 RESIDENT IN BED SIDELYING TOO CLOSE TO EDGE OF BED WITH KNEES HANGING OFF OF BED	1 RESIDENT SLEEPING IN SIDELYING NEAR EDGE OF BED WITH KNEES OFF OF BED; 1 RESIDENT SLEEPING IN SIDELYING NEAR EDGE OF BED WITH BUTTOCKS OFF OF EDGE OF BED
POOR SAFETY	1 RESIDENT REPEATEDLY FORGETS WALKER	1 RESIDENT REPEATEDLY FORGETS WALKER	1 RESIDENT REPEATEDLY FORGETS WALKER (STAFF SAW RESIDENT WITHOUT WALKER AND DID NOT RETRIEVE IT); 2 RESIDENTS LEFT WALKER TO WALK TO DIFFERENT AREA OF ROOM
INCONTINENCE	NO ISSUES OBSERVED	NO ISSUES OBSERVED	2 RESIDENTS WITH URINARY INCONTINENCE

Table 47. (continued)

AGITATION	NO ISSUES OBSERVED	2 RESIDENTS WANDERING REPEATEDLY (1 ABOVE FORGETTING WALKER)	1 RESIDENT WANDERING FROM ROOM THROUGHOUT NIGHT (DAYS/NIGHTS CONFUSED, AS SAME RESIDENT OBSERVED SLEEPING ON COUCH THROUGHOUT DAY/EVENING VISITS)
OTHER	5 RESIDENTS WITH PANTS TOO LONG	1 RESIDENT WALKING WITHOUT WALKER WITH "SNUGGIE" WRAPPED AROUND BODY – TOO LONG; 1 RESIDENT WITH LONG ROBE; 2 RESIDENTS WITH PANTS TOO LONG	1 RESIDENT WITH ROBE TOO LONG; 3 RESIDENTS WITH PANTS TOO LONG
STAFF ISSUES			
STAFF UNAVAILABLE	NO ISSUES OBSERVED	2 EPISODES WITH STAFF IN OTHER ROOM WHILE WANDERING RESIDENT LEFT ROOM WITHOUT WALKER, ONCE WITH TOO LONG SNUGGIE	1 FELL ASLEEP IN CHAIR, HAD TO BE AWAKENED BY OBSERVER FOR RESIDENTS' NEEDS; OBSERVER SAW RESIDENT FALL, HAD TO LOCATE STAFF FOR HELP (1 SLEEPING IN ROOM, BUT TECHNICALLY NOT "ON DUTY," THE OTHER OBSERVER BELIEVES WAS IN SMOKING AREA SUPERVISING OTHER RESIDENTS
COMMUNICATION	NO ISSUES OBSERVED	NO ISSUES	NO ISSUES

Table 47. (continued)

OTHER	NO ISSUES OBSERVED	NO ISSUES	2 EPISODES OF 2 DIFFERENT STAFF LEADING SAME RESIDENT BY "PULLING"/GUIDING WALKER BY WALKING BACKWARDS WHILE MOVING WALKER FOR RESIDENT TO FOLLOW, WALKER BETWEEN STAFF AND RESIDENT, WALKER TOO FAR IN FRONT OF RESIDENT

Table 48. Observed unsafe footwear: specifics

FOOTWEAR STYLE	7-3 SHIFT	3-11 SHIFT	11-7 SHIFT
"NON-SLIP FOOTIES"			
RUNNING SHOES	1 (ON FRAIL FEMALE); 1 HIGH TOP POORLY LACED		1 (ON FRAIL FEMALE)
BALLET-TYPE SLIPPERS			1, TOO BIG, WALKING ON BACKS
BACKLESS SLIPPERS	7	2	3
SHOES TOO LARGE	2, AND 1 SLIP ON SHOES WITH ZIPPERS, ZIPPERS UNDONE (MAKING SHOES TOO LOOSE)	1, AND 1 SLIP ON SHOES WITH ZIPPERS, ZIPPERS UNDONE (MAKING SHOES TOO LOOSE)	1, AND 1 SLIP ON SHOES WITH ZIPPERS, ZIPPERS UNDONE (MAKING SHOES TOO LOOSE)
SHOES WORN LIKE BACKLESS SLIPPERS (i.e., RESIDENT WALKING ON BACK OF SHOE)		1	1, AND 1 WITH 2 DIFFERENT SHOES WALKING ON BACKS WITH SHOES UNTIED
BACKLESS PLASTIC CLOG			1 (RESIDENT FELL)
SLIPPERS (WITHOUT SUPPORT, WITHOUT TRACTION ON BOTTOMS)	2, BOTH TOO LARGE; 1, SLIPPERS TOO LARGE AND RESIDENT WALKS ON BACKS		1
REGULAR SOCKS		3	3
BARE FEET			
"DRESS" SHOES			
BROKEN DOWN/WORN SHOES	1		

Table 49. Observed inadequate/inappropriate use of assistive devices: specifics

ACTION	7-3 SHIFT	3-11 SHIFT	11-7 SHIFT
PUSH WALKER TOO FAR IN FRONT	1 AND MOVES TOO FAST FOR SAFE MOBILITY		
AD TOO HIGH	5	3	6
AD TOO LOW	1		
TOO MANY BELONGINGS HANGING FROM WALKER	1	1	1, AND 1 RESIDENT USING QUAD CANE AND CARRYING BIG, HEAVY PURSE
NOT USING AD, BUT WOULD BENEFIT FROM	1		
OTHER	1 RESIDENT WITH HAND ON WALKER AND 1 ON HANDRAIL		1 RESIDENT WITH IMPROPER SEQUENCING WITH CANE – FELL, PER STAFF, RESIDENT TO BE USING WHEELED WALKER; 1 RESIDENT WITH HAND ON WALKER AND HAND ON HANDRAIL; 1 RESIDENT USING FURNITURE FAR APART TO WALK TO TABLE; 1 RESIDENT RUSHING, MOVING TOO FAST FOR SAFETY

AD = ASSISTIVE DEVICE

A.4   PERSONAL CARE HOME OBSERVATIONS -- RESULTS

This section contains the results of the observations at both PCHs.

A.4.1   Tallies of Observations Over Both Facilities

This subsection shows the total frequency count of each incident at each facility over all three shifts, as well as a combined total of the two facilities. If an item fit into more than one category, it was counted in each category. For instance, if footwear was both a backless slipper and too large, a mark was placed in each category, as both are separate, unsafe issues. As a result, in some categories, the overall total may be higher than originally noted. On the original forms, descriptors were used in place of tallies when more than one issue arose with the same item, thus making clearer what the concerns were. For the purpose of planning the Delphi survey contents, however, an overall total was more informative, thus separating each issue into its own category provided more information.

176

Table 50. Total number of each observed incident, per facility and combined

CONTRIBUTING FACTORS ENVIRONMENTAL	PCH 1 TOTAL	PCH 2 TOTAL	COMBINED TOTALS
SPILLS/UNMARKED WET AREAS	3	0	3
OBSTACLES	5	DINING ROOM CROWDED	>6
FLOORING	0	0	0
FURNITURE	7 CHAIRS NOT PUSHED UNDER TABLES AFTER LUNCH, LIMITING WALKING AREA; UPSTAIRS NUMEROUS CHAIRS NOT PUSHED IN AFTER BREAKFAST (AFTER SHIFT CHANGE)	6	>13
WHEELCHAIRS	1	0	1
LIGHTING	0	20	20
OTHER	3 HANDRAILS MISSING (ALONG 3 HALLS); 5 ADDITIONAL GRAB BARS MISSING/SHOULD BE LOCATED IN VARIOUS BATHROOMS	1	9
RESIDENT ISSUES			
FOOTWEAR (see Table 51 for details)	51	38	89
INAPPROPRIATE/INADEQUATE USE OF ASSISTIVE DEVICE (see Table 52 for details)	33	32	65
POOR POSITIONING	5	4	9
POOR SAFETY	8	5	13
INCONTINENCE (OBVIOUS)	2	2	4
AGITATION	5	3	8

Table 50. (continued)

	PCH 1	PCH 2	COMBINED
OTHER	1 AMBULATORY RESIDENT IN ROOM FAR FROM DINING ROOM, LEANS ON ELBOW ON WALKER AND APPARENTLY FATIGUED; 17 CLOTHING ISSUES; 2 O_2 NON-COMPLIANCE ISSUES	12 CLOTHING TOO LONG	32
STAFF ISSUE			
STAFF UNAVAILABLE	NO STAFF WHILE HAVING ?? PETIT MAL SEIZURE;	4	5
COMMUNICATION	4 EPISODES OF STAFF RAISING VOICE; 1 EPISODE OF STERN PHYSICAL CONTACT ALONG WITH RAISED VOICE	0	6
OTHER	1 STAFF DID NOT CORRECT UNSTEADY RESIDENT LEAVING WALKER BEHIND; 1 STAFF FELL ASLEEP	2 EPISODES OF DIFFERENT STAFF MEMBERS "PULLING" WALKER OF RESIDENT WHILE STAFF WALKING BACKWARD, WITH WALKER IN-BETWEEN STAFF MEMBERS AND RESIDENT, THUS "PULLING" RESIDENT USING WALKER AND FORCING WALKER TOO FAR FORWARD	4

Table 51. Observed unsafe footwear, per facility and combined: specifics

FOOTWEAR STYLE	PCH 1	PCH 2	COMBINED
"NON-SLIP FOOTIES"	3	0	3
RUNNING SHOES	7 (3 UNSECURE)	3 (1 UNSECURE)	10
BALLET-TYPE SLIPPERS	1	1	2
BACKLESS SLIPPERS	12	12	24
SHOES TOO LARGE	18	10	28
SHOES WORN LIKE BACKLESS SLIPPERS (i.e., RESIDENT WALKING ON BACK OF SHOE)	4	4	4
BACKLESS PLASTIC CLOG	2	1 (RESIDENT FELL)	3 (1 FALL)
SLIPPERS (WITHOUT SUPPORT, WITHOUT TRACTION ON BOTTOMS)	7	3	10
REGULAR SOCKS	6	6	12
BARE FEET	1	0	1
"DRESS" SHOES	2	0	2
BROKEN DOWN/WORN SHOES	0	1	1

Table 52. Observed inadequate/inappropriate use of assistive devices, per facility and combined: specifics

ACTION	PCH 1	PCH 2	COMBINED
PUSH WALKER TOO FAR IN FRONT	2	1	3
AD TOO HIGH	10	14	24
AD TOO LOW	0	1	1
TOO MANY BELONGINGS HANGING FROM WALKER	8	4	12
NOT USING AD, BUT WOULD BENEFIT FROM	6	2	8
OTHER	2 UNSAFE WITH WHEELED WALKER; 2 EPISODES OF RESIDENT RELYING HEAVILY ON WHEELED WALKER, BREATHING HEAVILY	2 MOVE TOO FAST FOR SAFE MOBILITY; 3 UNSAFE USE OF WHEELED WALKER; 1 W POOR SEQUENCING W CANE, FELL, PER STAFF, TO BE USING WALKER	10 (1 FALL)

AD = ASSISTIVE DEVICE

A.4.2 Comparative Statistics

This subsection contains the raw count of fall-related issues observed at each PCH, as well as adjusting the frequency counts as adjusted for size of facility (using average resident count/census as provided by the administrators).

Table 53. Comparison of incidents between facilities: raw number and number per resident

	PCH 1	INCIDENT PER RESIDENT	PCH 2	INCIDENT PER RESIDENT
ENVIRONMENT				
SPILLS/UNMARKED WET AREA	3	0.05	0	0.00
OBSTACLES	5	0.08	1	0.03
FLOORING	0	0.00	0	0.00
FURNITURE	7	0.12	6	0.17
WHEELCHAIRS	1	0.02	0	0.00
LIGHTING	0	0.00	20	0.57
OTHER	8	0.13	1	0.03
RESIDENT ISSUES				
FOOTWEAR	51	0.85	38	1.09
ASSISTIVE DEVICE PROBLEMS	33	0.55	32	0.91
POOR POSITIONING	5	0.08	4	0.11
POOR SAFETY	8	0.13	5	0.14
INCONTINENCE	2	0.03	2	0.06
AGITATION	5	0.08	3	0.09
OTHER	20	0.33	12	0.34
STAFF ISSUES				
STAFF UNAVAILABLE	1	0.02	4	0.11
COMMUNICATION	6	0.10	0	0.00
OTHER	2	0.03	2	0.06
TOTAL	157	2.62	130	3.71

Under columns labeled PCH1 and PCH 2, the total number of incidents per category are listed down first column occurring during observation periods. Columns listed "Incident per Resident" indicates the number of occurrences of specific incident observed per average number of residents in each PCH. In the questionnaire, the administrator of PCH 2 indicated that approximately 6 falls occur per 3-month period, with an average resident census of 35; the administrator of PCH 1 indicated approximately 3 falls occur per 3-month period with an average census of 58. The values here indicate that, per resident, in the 24 hour observation period, PCH 2 quite often had a higher number of observed incidents per resident than PCH 1. In some cases, despite PCH 2 being smaller, the absolute number of occurrences of an incident related to fall risks was nearly as high (such as assistive device problems, incontinence) or higher (staff unavailable, lighting) than noted during the 24 hour observation of PCH 1. The administrator noted on her questionnaire that most falls occurred due to medical issues, or to resident non-compliance issues. The information here suggests that there are likely various reasons that may contribute to increased falls in this PCH, and many of them can be altered. One fall occurred during an observation period.

B.1. PROGRAM DEVELOPMENT – DELPHI METHOD SURVEY

This appendix continues with sections leading up to the development of the educational program. This section will focus on the survey utilizing the Delphi Method of achieving consensus.

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B.1.1   Survey participants -- description

This subsection contains an overview and descriptive statistics of the survey participants.

Table 54. Participants of Delphi Method survey

NUMBER	PROFESSION	AGE	YRS AS PRACTITIONER	YRS W OLDER ADULTS	SPECIAL CERTIFICATIONS, IF ANY
1	PT	43	21	21	Certificate of Gerontology, Masters of Science, Continuing Adult Vocational Education
2	OT	46	13	13	n/a
3	RN	56	25	25	Gerontological Clinical Nurse Specialist
4	PT	42	21	21	Geriatric Clinical Specialist, Certified in Neurodevelopmental Treatment, Certified in Vestibular Rehabilitation
5	PT	54	32	32	Certified Geriatric Clinical Specialist
6	OT	52	26	26	AOTA (American Occupational Therapy Association) Board Certification in Gerontology
7	MD	41	10	10	Board Certified in Internal Medicine and Geriatric Medicine
8	RN	52	28	28	C-AL: Certified in Assisted Living Nursing via AALNA (American Assisted Living Nursing Association)
9	OT	43	19	19	n/a
10	RN	54	38	38	PhD, Certified Registered Nurse Practitioner
11	PT	41	17	17	Geriatric Clinical Specialist from the American Board of Physical Therapy Specialties (ABPTS)
12	OT	44	23	23	Board Certified in Gerontology (American Occupational Therapy Association)
13	MD	44	14	14	Fellowship
14	PT	50	26	26	ABPTS Certified Geriatric Clinical Specialist
15	OT	48	27	19	n/a
16	PT	52	30	30	Geriatric Clinical Specialist Physical Therapist
17	RN	65	14	10	Certified Assisted Living Nurse
18	RN	69	48	24	American Nurses Credentialing Center Board Certified in Gerontological Nursing; American Assisted Living Nurses Association certification
19	RN	58	36	22	Certified Dementia Care Specialist
20	MD	43	7	10	Board Certified in Internal Medicine and Geriatric Medicine; Masters in Public Health; Masters of Arts in Clinical Ethics

PT=Physical Therapist; OT=Occupational Therapist; RN=Registered Nurse; MD=Geriatrician

Table 55. Descriptive statistics of participants of Delphi Method survey

NUMBER	PROFESSION	AGE	YRS AS PRACTITIONER	YRS W OLDER ADULTS
1	PT	43	21	21
2	OT	46	13	13
3	RN	56	25	25
4	PT	42	21	21
5	PT	54	32	32
6	OT	52	26	26
7	MD	41	10	10
8	RN	52	28	28
9	OT	43	19	19
10	RN	54	38	38
11	PT	41	17	17
12	OT	44	23	23
13	MD	44	14	14
14	PT	50	26	26
15	OT	48	27	19
16	PT	52	30	30
17	RN	65	14	10
18	RN	69	48	24
19	RN	58	36	22
20	MD	43	7	10
MEAN		49.85	23.75	21.40
SD		7.93	10.12	7.67
MEDIAN		49.00	24.00	21.50

AGE (IN YEARS): Range 41-69; Mean 49.85; SD 7.93; Median 49.00.
YEARS OF EXPERIENCE: Range 7-48; Mean 23.75; SD 10.12; Median 24.00.
YEARS WORKING WITH OLDER ADULTS: Range 10-38; Mean 21.40; SD 7.67; Median 21.50.

B.1.2 Raw results to Zoomerang® survey questions

The Zoomerang® survey software was utilized for this survey. This subsection includes the raw results of the first and only round of the survey utilizing the Delphi Method. The Zoomerang® report includes both the number of respondents to choose each item, as well as the percentage. Included in this report is both the rating of each item, as well as the ranking.

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Table 56. Delphi Method survey results – raw scores and percent scores for questions related to the ENVIRONMENT, exported from Zoomerang® survey

	THIS ITEM SHOULD DEFINITELY NOT BE INCLUDED	THIS ITEM IS NOT NECESSARY FOR EFFECTIVENESS	ALTHOUGH NOT ESSENTIAL, THIS ITEM WOULD ENHANCE THE CONTENT	THIS ITEM IS ESSENTIAL TO BE INCLUDED	Total	Average Rating
Clutter	0.00% 0	0.00% 0	25.00% 5	75.00% 15	20	3.75
Wet floors	0.00% 0	5.00% 1	15.00% 3	80.00% 16	20	3.75
Floor surface	0.00% 0	0.00% 0	55.00% 11	45.00% 9	20	3.45
Transitions between floor surfaces	0.00% 0	0.00% 0	35.00% 7	65.00% 13	20	3.65
Support or handrails along walls	0.00% 0	10.00% 2	35.00% 7	55.00% 11	20	3.45
Grab bars in bathrooms	0.00% 0	5.00% 1	10.00% 2	85.00% 17	20	3.80
Height of toilet seat	0.00% 0	5.00% 1	35.00% 7	60.00% 12	20	3.55
Height of seating surfaces	0.00% 0	10.00% 2	25.00% 5	65.00% 13	20	3.55
Cushion softness	0.00% 0	10.00% 2	60.00% 12	30.00% 6	20	3.20
Armrests on chairs	0.00% 0	0.00% 0	30.00% 6	70.00% 14	20	3.70
Condition of furniture	0.00% 0	20.00% 4	40.00% 8	40.00% 8	20	3.20

Table 57. Delphi Method survey results – raw scores and percent scores for questions related to the MOBILITY, exported from Zoomerang® survey

—	THIS ITEM SHOULD DEFINITELY NOT BE INCLUDED—	THIS ITEM IS NOT NECESSARY FOR EFFECTIVENESS—	ALTHOUGH NOT ESSENTIAL, THIS ITEM WOULD ENHANCE THE CONTENT—	THIS ITEM IS ESSENTIAL TO BE INCLUDED—	Total—	Average Rating—
— Difficulty with transfers	0.00% 0	0.00% 0	10.00% 2	90.00% 18	20	3.90
— Unsteady gait/decline in gait	0.00% 0	0.00% 0	15.00% 3	85.00% 17	20	3.85
— Assistive devices	0.00% 0	0.00% 0	15.00% 3	85.00% 17	20	3.85

Table 58. Delphi Method survey results – raw scores and percent scores for questions related to the AGE-RELATED CHANGES, exported from Zoomerang® survey

—	THIS ITEM SHOULD DEFINITELY NOT BE INCLUDED—	THIS ITEM IS NOT NECESSARY FOR EFFECTIVENESS—	ALTHOUGH NOT ESSENTIAL, THIS ITEM WOULD ENHANCE THE CONTENT—	THIS ITEM IS ESSENTIAL TO BE INCLUDED—	Total—	Average Rating—
— Visual	0.00% 0	0.00% 0	20.00% 4	80.00% 16	20	3.80
— Incontinence	0.00% 0	20.00% 4	25.00% 5	55.00% 11	20	3.35
— Strength	0.00% 0	15.00% 3	35.00% 7	50.00% 10	20	3.35
— Balance	0.00% 0	5.00% 1	25.00% 5	70.00% 14	20	3.65
— Musculoskeletal	0.00% 0	15.00% 3	45.00% 9	40.00% 8	20	3.25
— Somatosensory	0.00% 0	10.00% 2	50.00% 10	40.00% 8	20	3.30
— Vestibular	0.00% 0	15.00% 3	55.00% 11	30.00% 6	20	3.15
— Attention	0.00% 0	20.00% 4	35.00% 7	45.00% 9	20	3.25

Table 59. Delphi Method survey results – raw scores and percent scores for questions related to the RESIDENT-RELATED ISSUES, exported from Zoomerang® survey

—	THIS ITEM SHOULD DEFINITELY NOT BE INCLUDED—	THIS ITEM IS NOT NECESSARY FOR EFFECTIVENESS—	ALTHOUGH NOT ESSENTIAL, THIS ITEM WOULD ENHANCE THE CONTENT—	THIS ITEM IS ESSENTIAL TO BE INCLUDED—	Total—	Average Rating—
— Clothing	5.00% 1	10.00% 2	45.00% 9	40.00% 8	20	3.20
— Footwear	0.00% 0	0.00% 0	0.00% 0	100.00% 20	20	4.00
— Age	10.00% 2	25.00% 5	40.00% 8	25.00% 5	20	2.80
— Gender	10.00% 2	35.00% 7	45.00% 9	10.00% 2	20	2.55
— Agitation/wandering	0.00% 0	15.00% 3	35.00% 7	50.00% 10	20	3.35
— Foot/ankle issues	0.00% 0	25.00% 5	30.00% 6	45.00% 9	20	3.20
— Chronic conditions such as stroke, Parkinson disease, arthritis	0.00% 0	0.00% 0	30.00% 6	70.00% 14	20	3.70
— Medication issues	0.00% 0	5.00% 1	10.00% 2	85.00% 17	20	3.80
— Recent hospital stay	0.00% 0	5.00% 1	35.00% 7	60.00% 12	20	3.55

Table 60. Delphi Method survey results – raw scores and percent scores for questions related to the STAFF-RELATED ISSUES, exported from Zoomerang® survey

	THIS ITEM SHOULD DEFINITELY NOT BE INCLUDED	THIS ITEM IS NOT NECESSARY FOR EFFECTIVENESS	ALTHOUGH NOT ESSENTIAL, THIS ITEM WOULD ENHANCE THE CONTENT	THIS ITEM IS ESSENTIAL TO BE INCLUDED	Total	Average Rating
Communication with older adults with dementia	0.00% 0	5.00% 1	15.00% 3	80.00% 16	20	3.75
Guarding residents during mobility	0.00% 0	5.00% 1	5.00% 1	90.00% 18	20	3.85
Availability	0.00% 0	20.00% 4	20.00% 4	60.00% 12	20	3.4

EXPLANATION OF RAW DATA INFORMATION:

Any items in which the consensus was 70% or above on "THIS ITEM IS ESSENTIAL TO INCLUDE" was automatically included in the educational program. The highest combined scores of "…ESSENTIAL…" and "ALTHOUGH NOT ESSENTIAL, THIS ITEM WOULD ENHANCE THE CONTENT" with a combined consensus of 70% or above was also included.

B.1.3   Zoomerang® results, top-rated.

This appendix includes the top items as rated by the respondents utilizing the Zoomerang® software, as well as the top fifteen ranked by the respondents. Due to the similarity of some of the items, more than fifteen were ultimately utilized in the program.

Table 61. Top items as scored by combining percentages rating 3 and 4; items sorted in order by percentage rating item at #4

ITEM	PERCENT RESPONSE 3 "ENHANCE"	PERCENT RESPONSE 4 "ESSENTIAL"	TOTAL PERCENT
FOOTWEAR	0	100	100
TRANSFER DIFFICULTY	10	90	100
GUARDING RESIDENTS DURING MOBILITY	5	90	95
UNSTEADY GAIT/DECLINE IN GAIT	15	85	100
ASSISTIVE DEVICES	15	85	100
GRAB BARS IN BATHROOMS	10	85	95
MEDICATION ISSUES	10	85	95
VISUAL CHANGES	20	80	100
WET FLOORS	15	80	95
COMMUNICATION WITH OLDER ADULTS WITH DEMENTIA	15	80	95
ARMRESTS ON CHAIRS	30	70	100
BALANCE	25	70	85
CHRONIC CONIDITIONS	10	70	80
TRANSITIONS BETWEEN FLOOR SURFACES	35	65	90
HEIGHT OF SEATING SURFACES	25	65	90
HEIGHT OF TOILET SEAT	35	60	95
FLOOR SURFACE	55	45	100
ATTENTION	35	45	80
SOMATOSENSORY	50	40	90
CLOTHING	45	40	85
MUSCULOSKELETAL	45	40	85

"3"= Not essential, but would enhance educational program
"4"= Essential to include

These items were all included in the educational program**.**

Table 62. Top items as ranked by survey participants

ITEM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL	PERCENT
UNSTEADY GAIT/DECLINE IN GAIT	5	4	1	1	2	0	1	1	1	1	0	0	1	1	0	19	0.95
TRANSFER DIFFICULTY	0	2	2	2	3	2	1	0	1	0	1	0	1	1	1	17	0.85
ASSISTIVE DEVICES	0	0	3	3	1	1	2	2	0	0	0	1	0	3	1	17	0.85
VISUAL CHANGES	0	2	0	0	1	2	2	2	0	0	1	1	1	0	3	15	0.75
BALANCE	1	1	2	2	0	2	1	1	1	1	0	1	0	0	1	14	0.7
FOOTWEAR	0	0	0	2	1	3	2	2	0	1	1	1	1	0	0	14	0.7
WET FLOORS	3	1	0	0	0	0	1	1	0	1	1	0	1	1	3	13	0.65
TRANSITIONS BETWEEN FLOOR SURFACES	0	0	1	0	0	0	0	1	2	4	0	2	1	1	1	13	0.65
CHRONIC CONDITIONS	1	1	0	0	1	0	0	2	3	1	0	0	1	1	1	12	0.6
MEDICATION ISSUES	0	2	1	1	0	1	1	1	0	2	2	0	1	0	0	12	0.6
CLUTTER	5	1	0	0	0	0	1	0	1	1	0	1	0	1	0	11	0.55
GRAB BARS IN BR	0	0	2	0	0	2	1	1	1	0	1	2	1	0	0	11	0.55
HEIGHT OF SEATING SURFACES	0	0	0	1	0	1	1	1	1	1	0	1	0	1	1	9	0.45
INCONTINENCE	0	0	1	2	1	1	0	0	2	1	0	0	0	0	1	9	0.45
STRENGTH	0	2	0	1	0	0	1	0	1	0	0	1	1	1	1	9	0.45

These are the top 15 of 32 ranked items by the 20 participants of the survey. Across the top is the rating, and each box contains the actual number of participants who chose that issue at that ranking. The highest ranked items do mostly correspond with the highest rated items, but at a much lower level of agreement. Numerous reasons likely contributed to the discrepancy in rankings, including large number to from which to choose, as well as potentially being unable to view all choices simultaneously on a smaller computer screens, among others.

APPENDIX C

PROGRAM DEVELOPMENT – COGNITIVE INTERVIEWS

This section contains information regarding the interview participants, as well as the forms pre-interview, with recommended changes demonstrated via the Track Changes® tool in Microsoft Word®.

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C.1.1 Cognitive interview participants -- description.

This is a subsection contains an overview and descriptive statistics for the participants in the cognitive interviews.

Table 63. Characteristics of volunteers for cognitive interviews

PARTICIPANT	AGE	GENDER	RACE[++]	YRS W OLD AD[**]	YRS IN ALF[oo]
1	49	F	CAUC	2	1
2	48	F	CAUC	2.5	1
3	54	F	CAUC	1.5	1.5
4	63	F	CAUC	2	2
5	57	F	CAUC	11	5
6	43	F	CAUC	7	7
7	63	F	NAT AM	31	8
8	53	F	ASIAN	15	15
9	62	F	CAUC	27	27

[++]CAUC = Caucasian; NAT AM = Native American; ASIAN = Asian
[**]YRS W OLD AD = Years working with older adults
[oo]YRS IN ALF = Years working in assisted living facilities or personal care homes

AGE (in years): Range 43-63; mean 54.67; SD 7.19; median 54.
YEARS WORKING WITH OLDER ADULTS: Range 1.5-31; mean 11; SD 11.25;
     median 7.
YEARS WORKING IN ALF/PCH: Range 1-27; mean 7.5; SD 8.62; median 5.

C.2 COGNITIVE INTERVIEWING FORMS

This section contains information regarding the interview participants, as well as the forms pre-interview, with recommended changes demonstrated via the Track Changes® tool in Microsoft Word®.

C.2.1 Cognitive interview forms – sample, pre-interview

This is a subsection contains the pre-test and the Likert scales prior to the interviews. Any wording in [brackets] and/or *italics* was included as description of pictures or videos to be used in the actual presentation. The participants were not asked to comment on these, as the wording would not appear on the actual pre/post-tests

PRE-TEST FOR FALL PREVENTION INSERVICE

ASSIGNED NUMBER_____   DATE_____

1.) **Which picture shows the BEST type of footwear to make a resident safer while walking:**
   a.) [picture of feet in "running shoes"]
   b.) [picture of feet in slippers with open back but properly fitting]
   c.) [picture of feet in "walking shoes" or "cross-trainers" with higher heel/ankle cuff] *CORRECT ANSWER*
   d.) [picture of feet in walking shoes that are too big]
   e.) All of the pictures show footwear that make residents safer.

2.) **Which video shows how tall a walker should be:**
   (all videos will be played once through, then played a second time)
   a.) [brief video of person walking with walker at correct height] *CORRECT ANSWER*
   b.) [brief video of person walking with walker too low]
   c.) [brief video of person walking with walker too high]
   d.) All of the videos look okay

3.) **Write down anything in this picture that might make a person fall. Write the word "nothing" if you don't see any problems:** *The photo will be posed in such a way to show these, however the clothing issues may be limited to one here, and appear in another)*
   [picture to include pants too long, baggy (low crotch) pants, thick carpet; other items in photo that will NOT be a hazard would include proper footwear, handrail along hallway, cane at proper height, proper lighting]

4.) **The resident in this video has dementia (show a brief video of a staff member trying to get a woman to take a bath, and the woman physical and verbally resists, pulling away and saying she doesn't want a bath and she doesn't have to if she doesn't want to):**
   a.) Insist, tell her that she has to get her bath every Tuesday/Thursday/Saturday on the evening shift & it's time for her bath.
   b.) Go away and come back a few minutes later and tell her she looks nice while you help her up and start walking down the hall to the bathroom
   c.) Go get someone right away to help you to get her to the bath
   d.) Talk about something she likes to talk about for a few minutes and then guide her toward the bathroom.
   e.) Both A & C are correct
   f.) Both B & D are correct *CORRECT ANSWER*

5.) Which hand should this resident hold his cane in (show a picture of a person with a cast boot on his left foot and ankle holding his cane in his left hand):
a.) The side of the leg that is hurt
b.) The side of the leg that is NOT hurt *CORRECT ANSWER*

6.) Write down all the things in this picture that might make a person fall. Write the word "nothing" if you don't see any problems: *The photo will be posed in such a way to show these, however the clothing issues may be limited to one here, and appear in another)*
 [photo to include unmarked wet spot on carpeted floor prior to transition onto linoleum, mop/bucket in path, walker too high, possible glare on floor]

7.) What is a problem that older people have with their eyes that might make them more likely to fall (show a place-holder slide of the face of an older adult):
a.)   They can't read very well
b.) When they come out of a room with a bright light into a hall with a little light, they can't see much *CORRECT ANSWER*
c.)   Their eyelids don't work very well, so they're eyes don't open all the way
d.) They don't look where they are walking

8.) Write down anything in this picture that you might make a person fall. Write the word "nothing" if you don't see any problems: *The photo will be posed in such a way to show these, however the clothing issues may be limited to one here, and appear in another)* [picture to show "resident" walking with proper footwear, good lighting, path free of clutter – i.e., no safety issues]

9.) You are trying to get residents ready for dinner, and ~~this~~ one resident always gets agitated and confused. When he gets this way, he starts walking around like this (video of someone walking very unsteady and in an agitated state). What should be done:
a)   Make him sit down, and stop him if he tries to get up
b)   Tell one of the other residents to holler for you if he starts wandering around
c)   Put him in a chair at a table and push the chair in so he can't get up
d)   Have him lie down after lunch for a little while *CORRECT ANSWER*
e)   A & B

10.)   Which type of floor is best for an older person to walk on:
a.) (picture of person standing with walker on linoleum)
b.) (picture of person standing with walker on low-pile carpeting) *CORRECT ANSWER*
c.) (picture of person standing with walker on thicker high-pile, but not shag, carpeting)
d.) All of the types of floor have the same level of safety

11.) **Which picture shows the right way to walk with a wheeled walker (show slide with multiple pictures, each assigned a letter; consider 3 videos instead, showing all once through, then showing a second time – downside of video is time…):**

      a.) [picture of person standing between the rear legs of the walker; if video, walking normally and staying between rear legs] *CORRECT*

      b.) [picture of person pushing walker in front of her; if video, walking normally but with walker in front of person]

      c.) [picture of person standing a little in front of hand grips; if video, walking normally, but with person maintaining body position slightly in front of hand grips]

(NO SLIDES FOR THE REST OF THE QUESTIONS):

12.) **A person is more likely to fall if they take at least how many medicines:**
a.) 2
b.) 4 *CORRECT ANSWER*
c.) 6
d.) 7
e.) 8

13.) **You notice that a resident is suddenly having more trouble standing up. What should you do:**
a.) Keep encouraging them so they try harder
b.) Change where they sit to a chair with armrests
c.) Tell the person in charge
d.) B & C *CORRECT ANSWER*
e.) Nothing, if you make a big deal about it, they'll keep doing it for attention

14.) **True or False: There is really nothing that can be done to prevent an old person from falling. Because they're old, and they don't wait for help, they're going to fall anyway.**
a.) True
b.) False *CORRECT ANSWER*

15.) **True or False: Nothing can be done to prevent an old person from breaking their hip if they fall:**
a.) True
b.) False *CORRECT ANSWER – HIP PROTECTORS, POSSIBLY THERAPY TO IMPROVE MUSCLE STRENGTH/MINIMIZE INJURY*

EVALUATION OF TRAINING PROGRAM
IMMEDIATELY POST-PRESENTATION

Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.

0------------1--------------2--------------3--------------4--------------5

2.) This program increased my understanding of the topic.

0------------1--------------2--------------3--------------4--------------5

3.) I can use this information in my day-to-day work.

0------------1--------------2--------------3--------------4--------------5

4.) This information will help me care for the residents better.

0------------1--------------2--------------3--------------4--------------5

5.) I would recommend this program to be used in the future.

0------------1--------------2--------------3--------------4--------------5

EVALUATION OF TRAINING PROGRAM
ONE MONTH POST-PRESENTATION

Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.

0------------1--------------2--------------3-------------4--------------5

2.) This program increased my understanding of the topic.

0------------1--------------2--------------3-------------4--------------5

3.) I have used this information in my day-to-day work.

0------------1--------------2--------------3-------------4--------------5

4.) This information has helped me care for the residents better.

0------------1--------------2--------------3-------------4--------------5

5.) I would recommend this program to be used in the future.

0------------1--------------2--------------3-------------4--------------5

C.2.2 Cognitive interview forms – sample, post-interview.

This is a subsection contains the pre-test and the Likert scales after the interviews. Any wording in [brackets] and/or *italics* was included as description of pictures or videos to be used in the actual presentation. The participants were not asked to comment on these, as the wording would not appear on the actual pre/post-tests. The "Track Changes"® feature in Microsoft® Word was used to indicate the changes. The markings here are still in place to indicate the changes.

PRE-TEST FOR FALL PREVENTION INSERVICE
(note – blue markings are the Track Changes Microsoft® Word markings to indicate changes made due to cognitive interviews)

ASSIGNED NUMBER_____ **DATE**_____
DEPARTMENT (ex., resident care aide, housekeeping,…)_____

1.) **Which picture shows the BEST type of footwear to make a resident ~~safer~~ less likely to fall while walking (circle the letter of the correct answer):**
   a.) ~~[picture of feet in "running shoes"]~~
   b.) ~~[picture of feet in slippers with open back but properly fitting]~~
   c.) ~~[picture of feet in "walking shoes" or "cross-trainers" with higher heel/ankle cuff]~~ *CORRECT ANSWER*
   d.) ~~[picture of feet in walking shoes that are too big]~~
   e.) All of the pictures show footwear that make residents equally ~~safer~~.

2.) **Which ~~video~~ picture shows how tall a walker should be:**
   ~~(all videos will be played once through, then played a second time)~~
   a.) ~~[brief video of person walking with walker at correct height]~~ *CORRECT ANSWER*
   b.) ~~[brief video of person walking with walker too low]~~
   c.) ~~[brief video of person walking with walker too high]~~
   d.) All of the ~~videos~~ pictures look okay

3.) **Write down anything in this picture that might make a ~~person~~ resident fall. Write the word ~~"nothing"~~ "no problems" if you don't see any problems:**
   ~~The photo will be posed in such a way to show these, however the clothing issues may be limited to one here, and appear in another)~~
   ~~[picture to include pants too long, baggy (low crotch) pants, thick carpet; other items in photo that will NOT be a hazard would include proper footwear, handrail along hallway, cane at proper height, proper lighting]~~

4.) **The resident in this video has dementia~~. (show a brief video of a staff member trying to get a woman to take a bath, and the woman physical and verbally resists, pulling away and saying she doesn't want a bath and she doesn't have to if she doesn't want to)~~ Which of the below statements describes the best way to handle this situation:**
   a.) Insist, tell her that she has to get her bath every Tuesday/Thursday/Saturday on the evening shift & it's time for her bath.
   b.) Go away and come back a few minutes later and tell her she looks nice while you help her up and start walking down the hall to the bathroom
   c.) Go get someone right away to help you to get her to the bath
   d.) Talk about something she likes to talk about for a few minutes and then guide her toward the bathroom.
   e.) Both A & C are correct
   f.) Both B & D are correct *CORRECT ANSWER*

(note – blue markings are the Track Changes Microsoft® Word markings to indicate changes made due to cognitive interviews)

5.) **Which hand should this resident hold his cane in ~~(show a picture of a person with a cast boot on his left foot and ankle holding his cane in his left hand)~~:**
   a.) The side of the leg that is hurt
   b.) The side of the leg that is NOT hurt *CORRECT ANSWER*

6.) **Write down all the things in this picture that might make a ~~person~~ resident fall. Write the word "~~nothing~~no problems" if you don't see any problems:** *~~The photo will be posed in such a way to show these, however the clothing issues may be limited to one here, and appear in another)~~*
   ~~[photo to include unmarked wet spot on carpeted floor prior to transition onto linoleum, mop/bucket in path, walker too high, possible glare on floor]~~

7.) **What is a problem that ~~older people~~ residents have with their eyes that might make them more likely to fall (show a place-holder slide of the face of an older adult):**
   a.) They can't read very well
   b.) When they come out of a room with a bright light into a hall with a little light, they can't see much *CORRECT ANSWER*
   c.) Their eyelids don't work very well, so they're eyes don't open all the way
   d.) They don't look where they are walking

8.) **Write down anything in this picture that you ~~-~~might make a ~~person~~ resident fall. Write the word "~~nothing~~no problems" if you don't see any problems:** *~~The photo will be posed in such a way to show these, however the clothing issues may be limited to one here, and appear in another)~~* ~~[picture to show "resident" walking with proper footwear, good lighting, path free of clutter – i.e., no safety issues]~~

9.) **You are trying to get residents ready for ~~dinner~~supper, and ~~this~~ this one resident always gets agitated and confused late in the day. When he gets this way, he starts walking around like this ~~(video of someone walking very unsteady and in an agitated state)~~. What should be done:**
   a.) Make him sit down, and stop him if he tries to get up
   b.) Tell one of the other residents to holler for you if he starts wandering around
   c.) Put him in a chair at a table and push the chair in so he can't get up
   d.) Have him lie down after lunch for a little while *CORRECT ANSWER*
   e.) A & B

(note – blue markings are the Track Changes Microsoft® Word markings to indicate changes made due to cognitive interviews)

10.) **Which type of floor is best for an ~~older person~~ resident to walk on:**
   a.) ~~(picture of person standing with walker on linoleum)~~
   b.) ~~(picture of person standing with walker on low-pile carpeting) CORRECT ANSWER~~
   c.) ~~(picture of person standing with walker on thicker high-pile, but not shag, carpeting)~~
   d.) All of the types of floor have the same level of safety

11.) **Which picture shows the right way to walk with a wheeled walker ~~(show slide with multiple pictures, each assigned a letter; consider 3 videos instead, showing all once through, then showing a second time – downside of video is time…)~~:**
   a.) ~~[picture of person standing between the rear legs of the walker; if video, walking normally and staying between rear legs] CORRECT~~
   b.) ~~[picture of person pushing walker in front of her; if video, walking normally but with walker in front of person]~~
   c.) ~~[picture of person standing a little in front of hand grips; if video, walking normally, but with person maintaining body position slightly in front of hand grips]~~

(NO SLIDES FOR THE REST OF THE QUESTIONS):

12.) **A ~~person~~ resident is more likely to fall if they take at least how many medic~~ations ("meds")~~ines:**
   a.) 2
   b.) 4 *CORRECT ANSWER*
   c.) 6
   d.) 7
   e.) 8

13.) **You notice that a resident is suddenly having more trouble than usual standing up. What should you do:**
   a.) Keep encouraging them so they try harder
   b.) Change where they sit to a chair with armrests
   c.) Tell the person in charge
   d.) B & C *CORRECT ANSWER*
   e.) Nothing, if you make a big deal about it, they'll keep doing it for attention

14.) **True or False: There is really nothing that can be done to prevent an ~~old person~~ resident from falling. Because they're ~~old~~elderly, and they don't wait for help, they're going to fall anyway.**
   a.) True
   b.) False *CORRECT ANSWER*

15.) **True or False: There is ~~N~~nothing that can be done to prevent an ~~old person~~ resident from breaking their hip if they fall:**
   a.) True
   b.) False

(note – blue markings are the Track Changes Microsoft® Word markings to indicate changes made due to cognitive interviews)

EVALUATION OF TRAINING PROGRAM
IMMEDIATELY POST-PRESENTATION

Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.

STRONGLY DISAGREE   STRONGLY AGREE

0-------------1---------------2---------------3--------------4---------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE

0-------------1---------------2---------------3---------------4---------------5
0----------1------------2-----------3-----------4-----------5

3.) I can use this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE

0-------------1---------------2---------------3---------------4---------------5
0----------1------------2-----------3-----------4-----------5

4.) This information will help me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE

0-------------1---------------2---------------3---------------4---------------5
0----------1------------2-----------3-----------4-----------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE

0-------------1---------------2---------------3---------------4---------------5
0----------1------------2-----------3-----------4-----------5

(note – blue markings are the Track Changes Microsoft® Word markings to indicate changes made due to cognitive interviews)

EVALUATION OF TRAINING PROGRAM
ONE MONTH POST-PRESENTATION

Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.

STRONGLY DISAGREE   STRONGLY AGREE
0-------------1---------------2---------------3---------------4---------------5
0-----------1-----------2-----------3-----------4-----------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE
0-------------1---------------2---------------3---------------4---------------5
0-----------1-----------2-----------3-----------4-----------5

3.) I have used this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE
0-------------1---------------2---------------3---------------4---------------5
0-----------1-----------2-----------3-----------4-----------5

4.) This information has helped me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE
0-------------1---------------2---------------3---------------4---------------5
0-----------1-----------2-----------3-----------4-----------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE
0-------------1---------------2---------------3---------------4---------------5
0-----------1-----------2-----------3-----------4-----------5

C.2.3   Cognitive interview forms – sample, post-revisions

This is a subsection contains the pre-test and the Likert scales after the interviews, with all changes complete. These are the tests that are used in the final version. Any wording in [brackets] and/or *italics* was included as description of pictures or videos to be used in the actual presentation. The participants were not asked to comment on these, as the wording would not appear on the actual pre/post-tests

PRE-TEST FOR FALL PREVENTION INSERVICE

ASSIGNED NUMBER_____   **DATE**_____
DEPARTMENT (ex., resident care aide, housekeeping,…)_____

1.) Which picture shows the BEST type of footwear to make a resident less likely to fall while walking (circle the letter of the correct answer):
a.)
b.)
c.)
d.)
e.) All of the pictures show footwear that make residents equallysafe.

2.) Which picture shows how tall a walker should be:
a.)
b.)
c.)
d.) All of the pictures look okay

3.) Write down anything in this picture that might make a resident fall. Write the word "no problems" if you don't see any problems:

4.) The resident in this video has dementia. Which of the below statements describes the best way to handle this situation:
a.) Insist, tell her that she has to get her bath every Tuesday/Thursday/Saturday on the evening shift & it's time for her bath.
b.) Go away and come back a few minutes later and tell her she looks nice while you help her up and start walking down the hall to the bathroom
c.) Go get someone right away to help you to get her to the bath
d.) Talk about something she likes to talk about for a few minutes and then guide her toward the bathroom.
e.) Both A & C are correct
f.) Both B & D are correct

5.) Which hand should this resident hold his cane in :
a.) The side of the leg that is hurt
b.) The side of the leg that is NOT hurt

6.) Write down all the things in this picture that might make a resident fall. Write the word "no problems" if you don't see any problems:

7.) What is a problem that residents have with their eyes that might make them more likely to fall (show a place-holder slide of the face of an older adult):
a.) They can't read very well
b.) When they come out of a room with a bright light into a hall with a little light, they can't see much
c.) Their eyelids don't work very well, so they're eyes don't open all the way
d.) They don't look where they are walking

8.) Write down anything in this picture that you might make a resident fall. Write the word "no problems" if you don't see any problems:

9.) You are trying to get residents ready forsupper, and this one resident always gets agitated and confused late in the day. When he gets this way, he starts walking around like this. What should be done:
a.) Make him sit down, and stop him if he tries to get up
b.) Tell one of the other residents to holler for you if he starts wandering around
c.) Put him in a chair at a table and push the chair in so he can't get up
d.) Have him lie down after lunch for a little while
e.) A & B

10.) Which type of floor is best for an resident to walk on:
a.)
b.)
c.)
d.) All of the types of floor have the same level of safety

11.) Which picture shows the right way to walk with a wheeled walker :
a.)
b.)
c.)

(NO SLIDES FOR THE REST OF THE QUESTIONS):

12.) A resident is more likely to fall if they take at least how many medications ("meds"):
a.) 2
b.) 4
c.) 6
d.) 7
e.) 8

13.) **You notice that a resident is suddenly having more trouble than usual standing up. What should you do:**
a.) Keep encouraging them so they try harder
b.) Change where they sit to a chair with armrests
c.) Tell the person in charge
d.) B & C
e.) Nothing, if you make a big deal about it, they'll keep doing it for attention

14.) **True or False: There is really nothing that can be done to prevent an resident from falling. Because they're elderly and they don't wait for help, they're going to fall anyway.**
a.) True
b.) False

15.) **True or False: There is nothing that can be done to prevent an resident from breaking their hip if they fall:**
a.) True
b.) False

POST-TEST FOR FALL PREVENTION INSERVICE

ASSIGNED NUMBER_____   DATE_____
DEPARTMENT (ex., resident care aide, housekeeping,…)_____

1.) Which picture shows the BEST type of footwear to make a resident less likely to fall while walking (circle the letter of the correct answer):
a.)
b.)
c.)
d.)
e.) All of the pictures show footwear that make residents equally safe.

2.) Which picture shows how tall a walker should be:
a.)
b.)
c.)
d.) All of the pictures look okay

3.) Write down anything in this picture that might make a resident fall. Write the word "no problems" if you don't see any problems:

4.) The resident in this video has dementia. Which of the below statements describes the best way to handle this situation:
a.) Insist, tell her that she has to get her bath every Tuesday/Thursday/Saturday on the evening shift & it's time for her bath.
b.) Go away and come back a few minutes later and tell her she looks nice while you help her up and start walking down the hall to the bathroom
c.) Go get someone right away to help you to get her to the bath
d.) Talk about something she likes to talk about for a few minutes and then guide her toward the bathroom.
e.) Both A & C are correct
f.) Both B & D are correct

5.) Which hand should this resident hold his cane in :
a.) The side of the leg that is hurt
b.) The side of the leg that is NOT hurt

6.) Write down all the things in this picture that might make a resident fall. Write the word "no problems" if you don't see any problems:

7.) What is a problem that residents have with their eyes that might make them more likely to fall (show a place-holder slide of the face of an older adult):
a.) They can't read very well
b.) When they come out of a room with a bright light into a hall with a little light, they can't see much
c.) Their eyelids don't work very well, so they're eyes don't open all the way
d.) They don't look where they are walking

8.) Write down anything in this picture that you might make a resident fall. Write the word "no problems" if you don't see any problems:

9.) You are trying to get residents ready for supper, and this one resident always gets agitated and confused late in the day. When he gets this way, he starts walking around like this. What should be done:
a.) Make him sit down, and stop him if he tries to get up
b.) Tell one of the other residents to holler for you if he starts wandering around
c.) Put him in a chair at a table and push the chair in so he can't get up
d.) Have him lie down after lunch for a little while
e.) A & B

10.)   Which type of floor is best for an resident to walk on:
a.)
b.)
c.)
d.) All of the types of floor have the same level of safety

11.)   Which picture shows the right way to walk with a wheeled walker :
a.)
b.)
c.)

(NO SLIDES FOR THE REST OF THE QUESTIONS):

12.)   A resident is more likely to fall if they take at least how many medications ("meds"):
a.) 2
b.) 4
c.) 6
d.) 7
e.) 8

13.)   You notice that a resident is suddenly having more trouble than usual standing up. What should you do:
a.) Keep encouraging them so they try harder
b.) Change where they sit to a chair with armrests
c.) Tell the person in charge
d.) B & C
e.) Nothing, if you make a big deal about it, they'll keep doing it for attention

14.)   True or False: There is really nothing that can be done to prevent an resident from falling. Because they're elderly and they don't wait for help, they're going to fall anyway.
a.) True
b.) False

15.)   True or False: There is nothing that can be done to prevent an resident from breaking their hip if they fall:
a.) True
b.) False

EVALUATION OF TRAINING PROGRAM
IMMEDIATELY POST-PRESENTATION

Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2----------------3----------------4----------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2----------------3----------------4----------------5

3.) I can use this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2----------------3----------------4----------------5

4.) This information will help me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2----------------3----------------4----------------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2----------------3----------------4----------------5

EVALUATION OF TRAINING PROGRAM
ONE MONTH POST-PRESENTATION

Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2---------------3---------------4---------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2---------------3---------------4---------------5

3.) I have used this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2---------------3---------------4---------------5

4.) This information has helped me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2---------------3---------------4---------------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2---------------3---------------4---------------5

C.3   PROGRAM DEVELOPMENT – TEST DEVELOPMENT

This portion contains sample questions from the Certified Nursing Assistants' (CNA) exam.

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C.3.1   Sample CNA certification exam questions.

This is a subsection contains sample questions from the CNA certification exam for individuals who will be providing non-professional direct caregiving in nursing homes (which are federally regulated).   These questions were reviewed as examples for style and format for question writing.

SAMPLE QUESTIONS FROM CNA EXAM

Sample Testing Questions for CNA:

From: http://www.cnatrainingclass.com/sample-testing-questions-for-cna-exam

When a client has left-sided weakness, what part of a sweater is put on first?
(A) Both sleeves
(B) Left sleeve
(C) Client's choice
(D) Right sleeve

Answer: (B) Left sleeve

Exercises that move each muscle and joint are called:
(A) adduction
(B) range of motion
(C) abduction
(D) rotation

Answer: (B) range of motion

The Heimlich maneuver (abdominal thrust) is used for a client who has:
(A) a blocked airway
(B) a bloody nose
(C) fallen out of bed
(D) impaired eyesight

Answer: (A) a blocked airway

Which of the following is a correct measurement of urinary output?
(A) 40 oz
(B) 2 cups
(C) 300 cc
(D) 1 quart

Answer: (C) 300 cc

BEFORE taking the oral temperature of a client who has just finished a cold drink, the nurse aide should wait:
(A) 10 to 20 minutes
(B) 25 to 35 minutes
(C) 45 to 55 minutes
(D) at least 1 hour

Answer: (A) 10 to 20 minutes

APPENDIX D

PRIMARY STUDY – EDUCATIONAL PROGRAM

D.1   EDUCATIONAL PROGRAM

This section contains information regarding the facilities, the participants, and statistical analyses of pre-tests, post-tests, follow up post-tests, Likert scales immediately post-presentation and follow up.

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D.1.1   Facility descriptions – forms for each facility as filled out by administrators.

This is a subsection contains descriptive information about all facilities that participated in the educational program and study. Facility 4 did not return the form, despite multiple attempts to retrieve, so that information is missing.

FACILITY 1 DESCRIPTION

In order to allow better analysis of data, please take a few moments to fill in the following information regarding your facility. If there are any questions you prefer not to answer, please just write that in the response. Thank you very much.

DEMOGRAPHICS

1.) Are you considered a personal care home or an assisted living facility under current PA definitions?

> *Personal care home*

2.) How many beds do you have?

> *Licensed for 110*

3.) How many residents to you typically have?

> *Between 77 and 79 residents, sometimes higher if a married couple move (sic) in*

4.) How many are men vs. women?

> *About 22 men vs. 58 women approximately*

5.) Approximately what age range are your residents?

> *Approximately 78 yrs. - 96 yrs.*

STAFFING

1.) How many total employees do you have?

> *25*

2.) How many are direct caregivers?

> *Approximately 15*

3.) What is the approximate education level of your direct caregivers?

> *High school and some college; CNA training class or vocational school*
> (CNA = certified nursing assistant)

4.) What is the approximate racial/ethnic distribution of your direct caregivers?

> *7 Caucasian, 7 African-American, 1 other race*

5.) How many men vs. women are direct caregivers?

> *2 men, 13 women*

6.) Do you staff according to a typical 7-3, 3-11, 11-7 format, or do you use different staffing patterns? If you use different staffing patterns, please briefly describe how you staff and why you do it this way.

> *We staff with typical 7-3, 3-11, and 11-7*

7.) How many caregivers are assigned per shift? How has this been determined?
   3 caregivers on 7-3, 3 on 3-1 and 2 on 11-7

8.) Are caregivers on night shift permitted to sleep?
   No

9.) Are there particular requirements for staffing supervision (i.e., is there the
   expectation that a staff member will be available on the floor at all times?...)
   *Yes, someone has to be available at all times for emergencies. The staff does
   carry pagers and radios*

10.)   Do you staff with RN's or LPN's and how is this supervision scheduled?
   *We staff with LPNs because it's personal care. There is usually a nurse on each
   shift.*

FACILITY 2 DESCRIPTION

In order to allow better analysis of data, please take a few moments to fill in the following information regarding your facility. If there are any questions you prefer not to answer, please just write that in the response. Thank you very much.

DEMOGRAPHICS

1.) Are you considered a personal care home or an assisted living facility under current PA definitions?
Assisted Living

2.) How many beds do you have?
Licensed for 115

3.) How many residents to you typically have?
99

4.) How many are men vs. women?
26 men; 73 women

5.) Approximately what age range are your residents?
62-101

STAFFING

1.) How many total employees do you have?
90

2.) How many are direct caregivers?
39

3.) What is the approximate education level of your direct caregivers?
High School

4.) What is the approximate racial/ethnic distribution of your direct caregivers?
97% Caucasian

5.) How many men vs. women are direct caregivers?
   4 men; 35 women

6.) Do you staff according to a typical 7-3, 3-11, 11-7 format, or do you use different staffing patterns? If you use different staffing patterns, please briefly describe how you staff and why you do it this way.
   Yes

7.) How many caregivers are assigned per shift? How has this been determined?
   7/7/3. Census

8.) Are caregivers on night shift permitted to sleep?
   No

9.) Are there particular requirements for staffing supervision (i.e., is there the expectation that a staff member will be available on the floor at all times?...)
   One on the floor on each shift. Nurse available/on call at all times.

10.)   Do you staff with RN's or LPN's and how is this supervision scheduled?
   One RN-Director of resident Care
   LPN-DRC schedules a charge/supervisor each shift.

FACILITY 3 DESCRIPTION

In order to allow better analysis of data, please take a few moments to fill in the following information regarding your facility. If there are any questions you prefer not to answer, please just write that in the response. Thank you very much.

DEMOGRAPHICS

1.) Are you considered a personal care home or an assisted living facility under current PA definitions?
Assisted Living

2.) How many beds do you have?
86, licensed for 100

3.) How many residents to you typically have?
80-90

4.) How many are men vs. women?
24 men, 62 women

5.) Approximately what age range are your residents?
71-101

STAFFING

1.) How many total employees do you have?
65

2.) How many are direct caregivers?
30

3.) What is the approximate education level of your direct caregivers?
High school; many college students; many C.N.A, although not required (certified nursing assts.)

4.) What is the approximate racial/ethnic distribution of your direct caregivers?
   Primarily Caucasian

5.) How many men vs. women are direct caregivers?
   1 male caregiver at this time

6.) Do you staff according to a typical 7-3, 3-11, 11-7 format, or do you use different staffing patterns? If you use different staffing patterns, please briefly describe how you staff and why you do it this way.
   6:30-2:30, 2:30-11:00, 11:00-7:30. Overlap in AM for breakfast and AM care

7.) How many caregivers are assigned per shift? How has this been determined?
   3-4. This number is based on needs for care. Additionally, there are 2 medication aides and a charge nurse.

8.) Are caregivers on night shift permitted to sleep?
   No.

9.) Are there particular requirements for staffing supervision (i.e., is there the expectation that a staff member will be available on the floor at all times?...)
   On every shift – RN available on call, LPN each shift, residents have call bells.

10.) Do you staff with RN's or LPN's and how is this supervision scheduled?
   LPNs as charge nurse; RN as Director of Nursing

FACILITY 5 DESCRIPTION

In order to allow better analysis of data, please take a few moments to fill in the following information regarding your facility. If there are any questions you prefer not to answer, please just write that in the response. Thank you very much.

DEMOGRAPHICS

1.) Are you considered a personal care home or an assisted living facility under current PA definitions?
> *PCH*

2.) How many beds do you have?
> *46*

3.) How many residents to you typically have?
> *About 38 typically*

4.) How many are men vs. women?
> *Currently, 9 men and 21 women*

5.) Approximately what age range are your residents?
> *(not answered)*

STAFFING

1.) How many total employees do you have?
> *50 total, including 1 PCH Administrator and 1 RN Care Manager*

2.) How many are direct caregivers?
> *38*

3.) What is the approximate education level of your direct caregivers?
> *High School*

4.) What is the approximate racial/ethnic distribution of your direct caregivers?
> *White 32; African-American 2*

5.) How many men vs. women are direct caregivers?
> *All women*

6.) Do you staff according to a typical 7-3, 3-11, 11-7 format, or do you use different staffing patterns? If you use different staffing patterns, please briefly describe how you staff and why you do it this way.

Yes – typical format

7.) How many caregivers are assigned per shift? How has this been determined?

7-3 shift: 1 LPN, 2 med techs (RCAs with additional training to become medication technicians)

3-11 shift: 1 LPN, 2 med techs

11-3 shift: 2 med techs

8.) Are caregivers on night shift permitted to sleep?

<u>NO</u>

9.) Are there particular requirements for staffing supervision (i.e., is there the expectation that a staff member will be available on the floor at all times?...)

RN on 11-7 shift oversees both the step down unit (same building, different floor) and PCH. A staff person is available on each floor at all times.

10.)   Do you staff with RN's or LPN's and how is this supervision scheduled?

RNs staff step down unit, LPN and med techs staff PCH & RN Care Manager oversees all units.

FACILITY 6 DESCRIPTION

In order to allow better analysis of data, please take a few moments to fill in the following information regarding your facility. If there are any questions you prefer not to answer, please just write that in the response. Thank you very much.

DEMOGRAPHICS

1.) Are you considered a personal care home or an assisted living facility under current PA definitions?
   PCH

2.) How many beds do you have?
   42

3.) How many residents to you typically have?
   35

4.) How many are men vs. women?
   Approximately 23 women and 12 men

5.) Approximately what age range are your residents?
   No answer given

STAFFING

1.) How many total employees do you have?
   10

2.) How many are direct caregivers?
   10

3.) What is the approximate education level of your direct caregivers?
   High school

4.) What is the approximate racial/ethnic distribution of your direct caregivers?
   10 white

5.) How many men vs. women are direct caregivers?
  All women

6.) Do you staff according to a typical 7-3, 3-11, 11-7 format, or do you use different staffing patterns? If you use different staffing patterns, please briefly describe how you staff and why you do it this way.
  Typical 7-3, 3-11, 11-7 format

7.) How many caregivers are assigned per shift? How has this been determined?
  Two caregivers per shift; number determined by number of mobile vs immobile residents

8.) Are caregivers on night shift permitted to sleep?
  No

9.) Are there particular requirements for staffing supervision (i.e., is there the expectation that a staff member will be available on the floor at all times?...)
  Yes, staff are to be available on floor at all times

10.)   Do you staff with RN's or LPN's and how is this supervision scheduled?
  No nursing staff

D.1.2 Overview of all participants who began the study

This is a subsection contains descriptive information about all participants who participated in the educational program and study.

Table 64. Representation of all participants, sorted by provided job information

NUMBER	JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF/ PCH
1	ACTIVITY	Activities Coord	F	22	Cauc	5	5
2	ACTIVITY	Activities	F	PNTA	Cauc	15	15
3	DR	Food Svc Worker	F	18	Mix Race	1	1
4	DR	Dining Rm Mgr	M	33	AA	0.06	0.06
5	DR	Lead Dietary Server	M	80	Cauc	15	15
6	DRIVER	Driver	F	59	Mix Race	16	16
7	HOUSE	ENVIRON SERVICES	M	24	AA	6	6
8	HOUSE	ENVIRON SERVICES	M	30	MIX RACE	5	0
9	HOUSE	HOUSEKEEPER	F	37	AA	4.5	4.5
10	HOUSE	Housekeeper	F	53	na	6.5	6.5
11	HOUSE	Housekeep/server	M	53	Cauc	20	10
12	HOUSE	HOUSEKEEPER/PORTER	M	53	CAUC	13	13
13	HOUSE	Housekeeper	F	61	Cauc	8.5	8.5
14	HOUSE	Envir Serv Aide	F	PNTA	Cauc	5.5	5.5
15	HOUSE	Lead Housekeeper	F	PNTA	Cauc/PNTA	20	12
16	HOUSE	HOUSEKEEPER	F	PTNA	AA	14	4.5
17	HOUSE	HOUSEKEEPER	F	PTNA		10	
18	HOUSE	Housekeeper	F		Cauc	7	3.5
19	KITCHEN	Chef	M	38	Cauc	1.5	1.5
20	KITCHEN	Cook	M	50	Asian	4	4
21	KITCHEN	Dishwasher	F	54	Cauc	10	7
22	KITCHEN	Cook	M	55	Cauc	13	2
23	KITCHEN	Dietary Mgr	M	55	Cauc	14	13
24	KITCHEN	Dietary	PNTA	PNTA		15	15
25	KITCHEN	Chef	PTNA	PTNA	PTNA	13.75	13.75
26	LPN	LPN	F	25	Cauc	0	0
27	LPN	LPN	F	26	CAUC	5	3
28	LPN	LPN	F	29	Cauc	4	3
29	LPN	LPN	F	30	CAUC	2	2
30	LPN	LPN	F	30	Cauc	2	2
31	LPN	LPN - CHG NURSE	F	36	CAUC	6	6
32	LPN	LPN	F	56	Cauc	26	10
33	LPN	LPN	F	61	Cauc	6.5	6
34	LPN	LPN/UNIT SUPERVIS	F	61	CAUC	33	33
35	LPN	LPN	F	62	AA	30	15
36	LPN	LPN	F	65	Cauc	17	13
37	LPN	LPN	F	PNTA	CAUC	9	9
38	LPN	LPN	F	PNTA	Cauc	30.5	8.5

Table 64. (continued)

39	LPN	LPN	F	PTNA	AA	18	4
40	MAINT	Maintenace Tech	M	54	Cauc	8	8
41	MAINT	Maintenance	M	60	Cauc	12	12
42	OFFICE	DIRECTOR OF RES CARE	F	39	CAUC	23	23
43	OFFICE	Admin Asst	F	42	Cauc	13	13
44	OFFICE	Administrator	F	52	Cauc	12	12
45	OFFICE	STAFF DEV	F	60	CAUC	27	0
46	OFFICE	Administrator	F	60	Cauc	20	13
47	OFFICE	Admin Asst	F	67	Cauc	20	20
48	OFFICE	Receptionist	F	69	Cauc	3	3
49	OFFICE	Receptionist	F	72	Cauc	4	4
50	OFFICE	Receptionist	F	PTNA	Cauc	1.25	1.25
51	RCA	Nrsg Asst	F	19	Cauc	1.5	1.5
52	RCA	RES CARE AIDE	F	20	MIX RACE		0
53	RCA	NRSG ASST	F	20	CAUC		0.06
54	RCA	RES CARE AIDE	F	20	PNTA	1.5	1.5
55	RCA	RES CARE AIDE	F	20	CAUC	2	2
56	RCA	Nrsg Asst	F	20	Cauc	2.5	2.5
57	RCA	Nrsg Asst	F	21	Cauc	2.5	1.5
58	RCA	RES CARE ASST/C N A	F	21	CAUC	3	3
59	RCA	RES CARE ASST	F	22	CAUC	0	0
60	RCA	RES CARE AIDE	F	22	CAUC	5	1
61	RCA	Nrsg Asst	F	22	Cauc	1.5	1.5
62	RCA	MED TECH	F	22	CAUC	3	3
63	RCA	RES CARE AIDE	F	25	CAUC	1	1
64	RCA	RES CARE ASST/C N A	F	25	CAUC	2.5	2.5
65	RCA	C N A	F	25	AA	4	3
66	RCA	MED TECH	F	25	AA	8	8
67	RCA	Nrsg Asst	F	26	Cauc	5	5
68	RCA	Nrsg Asst	F	27	Cauc	2	0.33
69	RCA	C N A	M	27	CAUC	6	3
70	RCA	Nrsg Asst	M	31	Cauc/Nat Am	8	??
71	RCA	Medication Aide	F	32	Cauc	0	0
72	RCA	MED TECH	F	33	CAUC	12	6
73	RCA	MED TECH	F	33	CAUC	10.5	7.5
74	RCA	RES CARE AIDE	F	34	CAUC	10	4
75	RCA	MED TECH	F	35	CAUC	3	3
76	RCA	MED TECH	F	37	CAUC	14	14
77	RCA	NRSG ASST	F	38	CAUC	20	15

Table 64. (continued)

78	RCA	RES CARE ASST/C N A	F	39	CAUC	11	3
79	RCA	MED TECH/RES CARE AIDE	F	41	CAUC	15.5	15.5
80	RCA	Med Tech	F	42	Cauc	11	8.5
81	RCA	RES CARE AIDE	F	43	CAUC	7	0
82	RCA	RES CARE ASST	F	44	CAUC	20	10
83	RCA	C N A	F	47	CAUC	13	3
84	RCA	RES CARE AIDE	F	47	CAUC	16	7
85	RCA	C N A	F	47	BLACK	17	7
86	RCA	RES CARE AIDE	F	47	MIX RACE	20	18
87	RCA	C N A	F	48	CAUC	17	3
88	RCA	RES CARE AIDE/C N A	F	49	CAUC	12	4
89	RCA	C N A	F	50	Cauc	20	10
90	RCA	NRSG ASST	F	51	CAUC	10	0.06
91	RCA	MED TECH	F	52	CAUC	30	13
92	RCA	MED TECH	F	53	AA	16	16
93	RCA	Medication Tech	F	54	Cauc	20	20
94	RCA	MED TECH	F	55	CAUC	6	6
95	RCA	RES CARE AIDE	F	55	AA	13	13
96	RCA	RES CARE AIDE	F	55	CAUC	15	15
97	RCA	RES CARE AIDE	F	55	CAUC	20	20
98	RCA	RES CARE AIDE	F	58	CAUC	25	5
99	RCA	Nrsg Asst	F	60	NatIve Am	22	1.5
100	RCA	C N A	F	61		13	4
101	RCA	MED TECH	F	61	CAUC	20	20
102	RCA	Medication Aide	F	62	Cauc	na	na
103	RCA	RES CARE AIDE	F	64	NAT AM	15.5	10
104	RCA	MED TECH	F	66	CAUC	13	13
105	RCA	Nrsg Asst	F	PNTA	Cauc	0.75	0.75
106	RCA	RES CARE AIDE	F	PNTA	CAUC	6	6
107	RCA	Nrsg Asst	F	PNTA	Hispanic	3	3
108	RCA	Nrsg Asst	F	PTNA	Cauc	3	3
109	RCA	MED TECH	F		CAUC	10	9
110	RCA	C N A	F		AA	25	18
111	RCA	NRSG ASST			MIX RACE	23	
112	RN	RN	M	24	CAUC	1	1
113	RN	RN	F	25	CAUC	1.5	1.5
114	RN	RN	F	31	CAUC	4	3
115	RN	RN	F	43	ASIAN	3.5	0
116	RN	RN	F	70	CAUC	33	0.5

Table 64. (continued)

117			F	37	CAUC	3	3
118			F	43	ASIAN	12	12
119	NRSG	Nursing	F	44	Cauc	4	4
120	NRSG	Nursing	F	PNTA	Cauc	14	14

PTNA = prefer not to answer
Blank boxes indicate where respondents did not fill in information
na = actual response from participant
RCA = Resident Care Aide
DR = Dining Room
F=Female
M=Male
AA=African-American
CAUC=Caucasian
NAT AM=Native American
Position is what the participant wrote as his/her job title, however these do not always correspond with the official job title as used by the facility. For instance, a number of participants wrote "CNA," or certified nursing assistant. This is not a job title as used by the facilities, but rather a certification that that individual has obtained and continues to fulfill all necessary requirements to retain their certification.
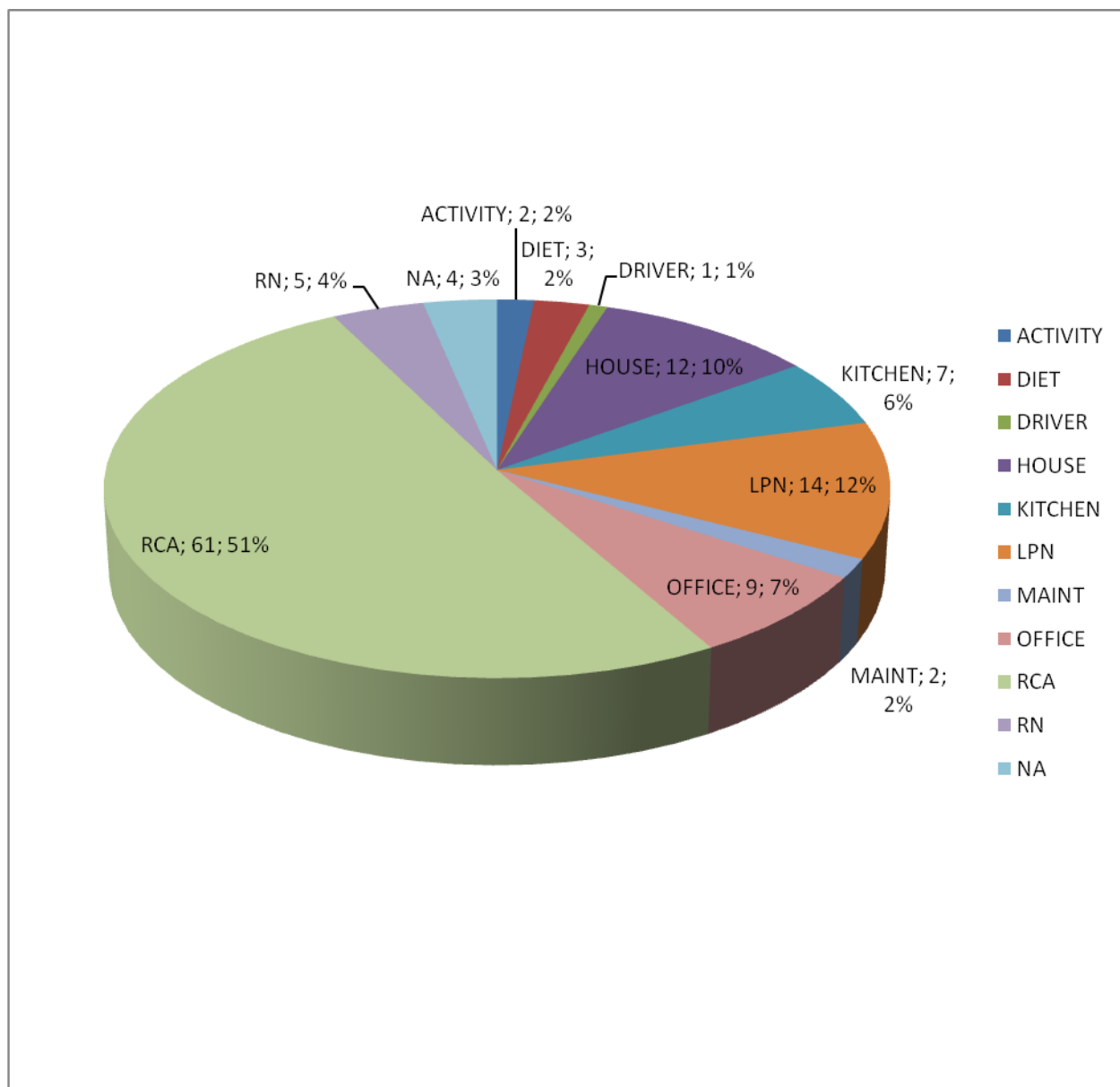
Figure 4. Graphic representation of participants in educational program by job category. Labeled as: job; absolute number; percentage.

The target audience for the educational program is the RCAs, who make up more than one half of all participants.
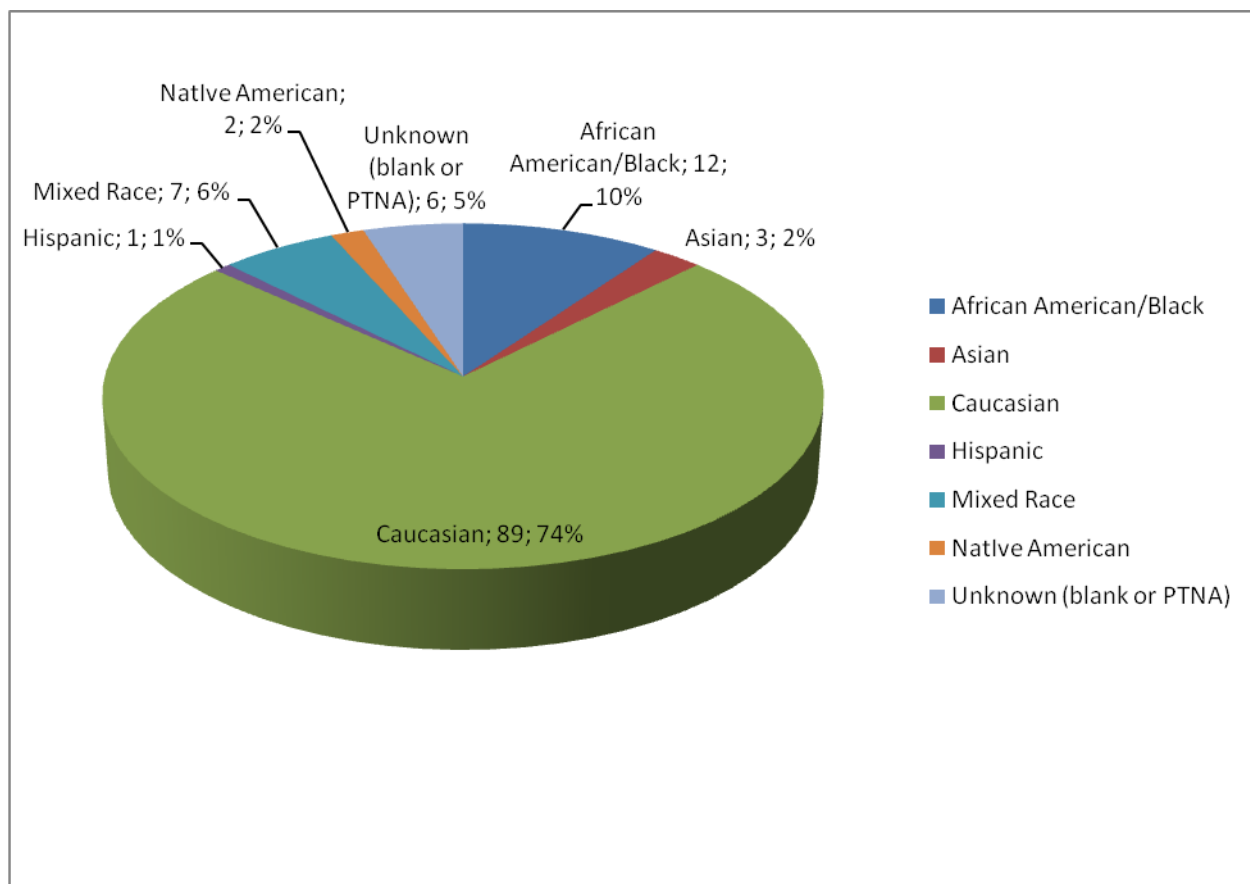
Figure 5. Graphic representation of all participants in the educational program as identified by self-reported race. Labeled as: race; absolute value; percentage of total.

PTNA = Prefer not to answer

Although some ethnic diversity is present, the vast majority (74%) of the participants were Caucasian, thus data collected may not be generalizable to all groups. Nearly all of the participants in the cognitive interviews were Caucasian as well, an acknowledged limitation of that section. The overwhelming majority of individuals who identified as Caucasian with both the test preparation and taking the tests before/after the educational program may have affected outcomes*.*
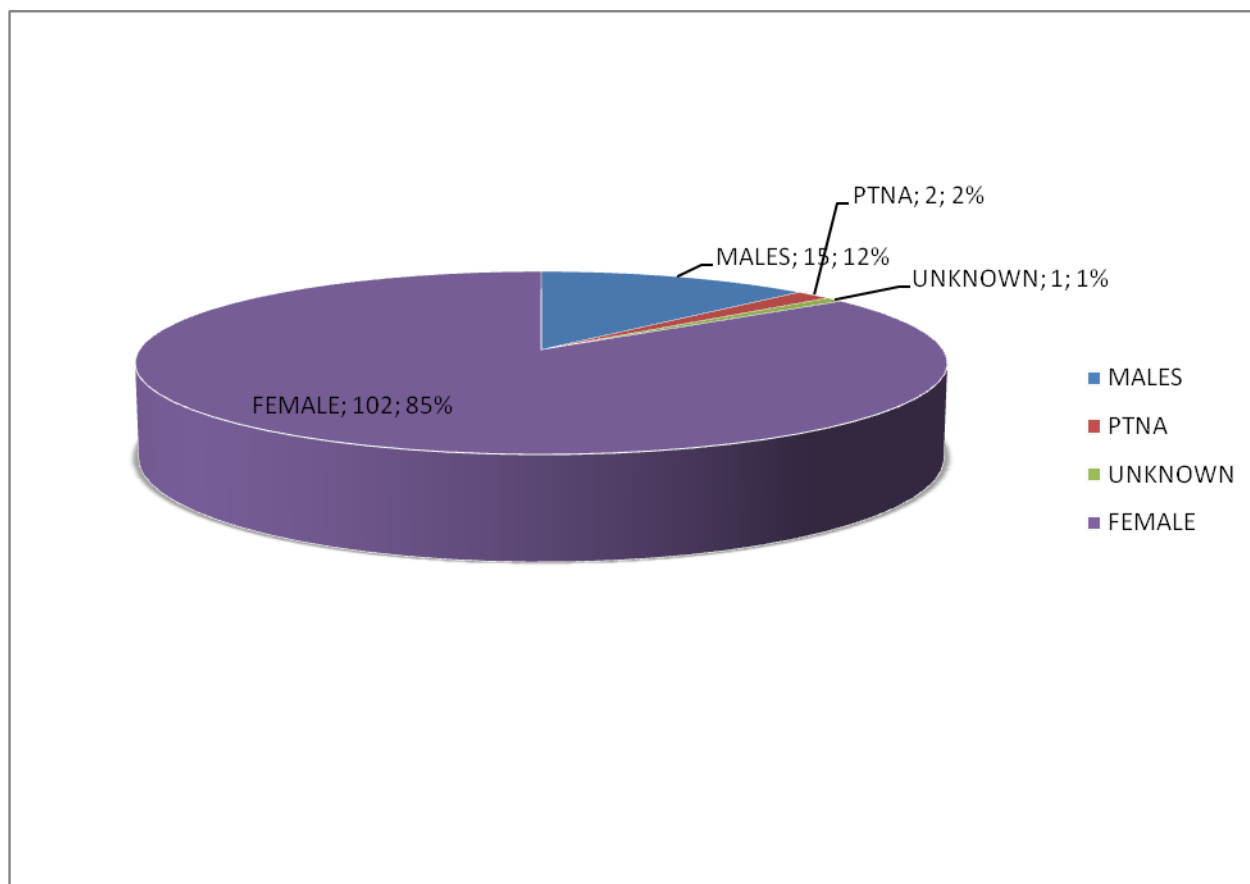
Figure 6. Graphic representation of all participants in educational program by identified gender

PTNA = Prefer not to answer
The vast majority of participants across all facilities are female.

D.2 EDUCATIONAL PROGRAM – PARTICIPANTS BY FACILITY

This section contains information regarding the facilities, the participants, and statistical analyses of pre-tests, post-tests, follow up post-tests, Likert scales immediately post-presentation and follow up.

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D.2.1 Data analysis for Facility 1

This is a subsection contains descriptive information about all participants from facility 1, including descriptive statistics, comparative statistics on test performance, as a whole, and by job title, and Likert scores for immediately post-presentation and on follow up. Facility 1 is part of a larger company operating numerous senior communities. This particular facility has a personal care home section, and a skilled nursing facility section, both housed in the same building. The presentation included only the PCH staff. The presentation was given over two days, the first in the morning to capture staff leaving the 11-7 shift and arriving 7-3 shift. The second was given in the afternoon on the following day to capture the departing 7-3 shift and arriving 3-11 shift. A change was made in the second day, with the supervisors from other departments requiring their staff to attend as well.

Table 65. Facility 1: Descriptive information of participants, Day 1, 7:30 AM

NUMBER	JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
1	RCA	RES CARE AIDE	F	55	AA	13	13
2	RCA	RES CARE AIDE	F	20	PNTA	1.5	1.5
3	RCA	RES CARE AIDE	F	47	MIX RACE	20	18

AA=African-American
PNTA=Prefer Not To Answer
MIX RACE=Mixed race

AGE: Range 20-47 years; mean 40.7; SD 18.3; median 47 years.
YEARS WORKING WITH OLDER ADULTS: Range 1.5-20; mean 11.5; SD 9.34; median 13
    years.
YEARS WORKING IN ALFs/PCHs: Range 1.5-18; mean 10.83; SD 8.46; median 13 years.
MALE TO FEMALE RATIO: 100% female.

Table 66. Facility 1: Descriptive information of participants, Day 2, 2:30 PM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
HOUSE	ENVIRON SERVICES	M	30	MIX RACE	5	0
HOUSE	HOUSEKEEPER	F	37	AA	4.5	4.5
HOUSE	HOUSEKEEPER	F	PTNA	AA	14	4.5
HOUSE	ENVIRON SERVICES	M	24	AA	6	6
HOUSE	HOUSEKEEPER/PORTER	M	53	CAUC	13	13
HOUSE	HOUSEKEEPER	F	PTNA		10	
LPN	LPN	F	26	CAUC	5	3
LPN	LPN	F	PTNA	AA	18	4
LPN	LPN	F	62	AA	30	15
LPN	LPN/UNIT SUPERVIS	F	61	CAUC	33	33
RCA	C N A	F	25	AA	4	3
RCA	MED TECH	F	33	CAUC	12	6
RCA	C N A	F	47	BLACK	17	7
RCA	MED TECH	F	53	AA	16	16
RCA	C N A	F		AA	25	18

AGE: Range24-62 years; mean 41; SD 14.62; median 41 years.
YEARS WORKING WITH OLDER ADULTS: Range 4-33 years ; mean 14.17; SD 9.27;
    median 13.
YEARS WORKING IN ALFs/PCHs: Range 0-33 years; mean 9.5; SD: 8.75; median 8 years.
MALE TO FEMALE RATIO: 3:12 (total participants 15; 20% male).

240

D.2.2 Data analysis for Facility 2.

This is a subsection contains descriptive information about all participants from facility 2, including descriptive statistics, comparative statistics on test performance, as a whole, and by job title, and Likert scores for immediately post-presentation and on follow up. Facility 2 is part of a larger company operating numerous senior communities. This particular facility has independent living, a personal care home section, and a skilled nursing facility. The presentation included only the PCH staff. The presentation was given once in the afternoon to capture the departing 7-3 shift and arriving 3-11 shift, however the inservice was mandatory for all departments and those not working were expected to come in for the presentation.

Table 67. Facility 2: Descriptive information for participants, scheduled from 2:00 PM – 3:00 PM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RCA	Nrsg Asst	F	26	Cauc	5	5
RCA	Nrsg Asst	M	31	Cauc/Nat Am	8	
RCA	Nrsg Asst	F	27	Cauc	2	0.33
RCA	Medication Aide	F	32	Cauc	0	0
RCA	Nrsg Asst	F	PNTA	Hispanic	3	3
RCA	Nrsg Asst	F	19	Cauc	1.5	1.5
OFFICE	Admin Asst	F	42	Cauc	13	13
OFFICE	Administrator	F	52	Cauc	12	12
MAINT	Maintenance	M	60	Cauc	12	12
LPN	LPN	F	61	Cauc	6.5	6
LPN	LPN	F	PNTA	Cauc	30.5	8.5
KITCHEN	Dietary Mgr	M	55	Cauc	14	13
KITCHEN	Dietary	PNTA	PNTA		15	15
KITCHEN	Cook	M	55	Cauc	13	2
KITCHEN	Chef	M	38	Cauc	1.5	1.5
HOUSE	Housekeeper	F	61	Cauc	8.5	8.5
HOUSE	Lead Housekeeper	F	PNTA	Cauc/PNTA	20	12
HOUSE	Housekeeper	F		Cauc	7	3.5
DR	Dining Rm Mgr	M	33	AA	0.06	0.06
DR	Lead Dietary Server	M	80	Cauc	15	15
DR	Food Svc Worker	F	18	Mix Race	1	1
ACTIVITY	Activities	F	PNTA	Cauc	15	15
	Nursing	F	PNTA	Cauc	14	14

AA=African-American   CAUC=Caucasian
PNTA=Prefer Not To Answer   RCA=Resident Care Aide
MIX RACE=Mixed race   DR=Dining Room

AGE: Range 18-80 years; mean 43.13; SD 14.19; median 40 years.
YEARS WORKING WITH OLDER ADULTS: Range 0-30.5 years; mean 9.46; SD 7.50; median 8.5.
YEARS WORKING IN ALFs/PCHs: Range 0-15 years; mean 5.72; SD 5.72; median 7.25 years.
MALE:FEMALE RATIO: 7:15; one PTNA (23 total, 30.4% male)

D.2.3 Data analysis for Facility 3.

This is a subsection contains descriptive information about all participants from facility 3, including descriptive statistics, comparative statistics on test performance, as a whole, and by job title, and Likert scores for immediately post-presentation and on follow up. Facility 3 is part of a larger company operating numerous senior communities. This particular facility has independent living, a personal care home section, and a skilled nursing facility. The presentation included only the PCH staff. The presentation was given once in the afternoon to capture the departing 7-3 shift and arriving 3-11 shift. The program was voluntary for all participants. Individuals from various departments attended.

Table 68. Facility 3: Descriptive information for participants

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
ACTIVITY	Activities Coord	F	22	Cauc	5	5
DRIVER	Driver	F	59	Mix Race	16	16
HOUSE	Envir Serv Aide	F	PNTA	Cauc	5.5	5.5
HOUSE	Housekeeper	F	53	na	6.5	6.5
HOUSE	Housekeep/server	M	53	Cauc	20	10
KITCHEN	Dishwasher	F	54	Cauc	10	7
KITCHEN	Cook	M	50	Asian	4	4
KITCHEN	Chef	PTNA	PTNA	PTNA	13.75	13.75
LPN	LPN	F	25	Cauc	0	0
LPN	LPN	F	30	Cauc	2	2
LPN	LPN	F	29	Cauc	4	3
LPN	LPN	F	56	Cauc	26	10
LPN	LPN	F	65	Cauc	17	13
MAINT	Maintenace Tech	M	54	Cauc	8	8
OFFICE	Receptionist	F	PTNA	Cauc	1.25	1.25
OFFICE	Receptionist	F	69	Cauc	3	3
OFFICE	Receptionist	F	72	Cauc	4	4
OFFICE	Administrator	F	60	Cauc	20	13
OFFICE	Admin Asst	F	67	Cauc	20	20
RCA	Nrsg Asst	F	PNTA	Cauc	0.75	0.75
RCA	Nrsg Asst	F	22	Cauc	1.5	1.5
RCA	Nrsg Asst	F	21	Cauc	2.5	1.5
RCA	Nrsg Asst	F	60	Nat Am	22	1.5
RCA	Nrsg Asst	F	20	Cauc	2.5	2.5
RCA	Nrsg Asst	F	PTNA	Cauc	3	3
RCA	Med Tech	F	42	Cauc	11	8.5
RCA	C N A	F	50	Cauc	20	10
RCA	Medication Tech	F	54	Cauc	20	20
RCA	Medication Aide	F	62	Cauc	na	na
	Nrsg	F	44	Cauc	4	4

AA=African-American   CAUC=Caucasian
PNTA=Prefer Not To Answer   RCA=Resident Care Aide
MIX RACE=Mixed race   CNA=Certified Nursing Assistant

AGE: Range 20-72 years; mean 47.72; SD 16.62; median 53 years.
YEARS WORKING WITH OLDER ADULTS: Range 0-26 years; mean 9.42; SD 8.03; median 5.5 yrs.
YEARS WORKING IN ALFs/PCHs: Range .75-20 years; mean 6.84; SD 5.68; median 5 years.
MALE:FEMALE RATIO: 3:27 (30 participants total, 10% male).

D.2.4 Data analysis for Facility 4.

This is a subsection contains descriptive information about all participants from facility 4, including descriptive statistics, comparative statistics on test performance, as a whole, and by job title, and Likert scores for immediately post-presentation and on follow up. Facility 4 is part of a larger company operating numerous senior communities. This particular facility has independent living, a personal care home section, and a skilled nursing facility. The presentation included only the PCH staff. The presentation was given once in the afternoon to capture the departing 7-3 shift and arriving 3-11 shift. The program was mandatory for all participants. Resident care aides and nurses attended.

Table 69. Facility 4: Descriptive information for participants, 2:30 PM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RCA	NRSG ASST	F	38	CAUC	20	15
RCA	MED TECH	F	33	CAUC	10.5	7.5
RCA	MED TECH	F	22	CAUC	3	3
RCA	NRSG ASST	F	20	CAUC		0.06
RCA	RES CARE AIDE	F	34	CAUC	10	4
RCA	NRSG ASST	F	51	CAUC	10	0.06
RCA	RES CARE AIDE	F	22	CAUC	5	1
RCA	MED TECH	F	25	AA	8	8
RCA	NRSG ASST			MIX RACE	23	
OFFICE	DIRECTOR OF RES CARE	F	39	CAUC	23	23
LPN	LPN	F	30	CAUC	2	2
LPN	LPN - CHG NURSE	F	36	CAUC	6	6
		F	43	ASIAN	12	12

AA=African-American　　　　　　　　　　CAUC=Caucasian
PNTA=Prefer Not To Answer　　　　　　　RCA=Resident Care Aide
MIX RACE=Mixed race

AGE: Range 20-51 years; mean 32.75; SD 9.43; median 33.5 years.
YEARS WORKING WITH OLDER ADULTS: Range 2-23 years; mean 11.04; SD 7.31;
　　　median 10 yrs.
YEARS WORKING IN ALFs/PCHs: Range .06-23 years; mean 6.8; SD 6.94; median 5 years.
MALE:FEMALE RATIO: 0:13 (13 participants total, 1 participant left question blank).

D.2.5   Data analysis for Facility 5.

This is a subsection contains descriptive information about all participants from facility 5, including descriptive statistics, comparative statistics on test performance, as a whole, and by job title, and Likert scores for immediately post-presentation and on follow up. Facility 5 is part of a larger company operating numerous senior communities. This particular facility has independent living, a personal care home section, and a skilled nursing facility. The presentation included only the PCH staff. The presentation was given four times over two separate days, twice in the morning to capture the departing 11-7 shifts, and twice in the afternoon to capture the departing 7-3 shift and arriving 3-11 shift. The program was mandatory for all participants. Resident care aides, nurses and some individuals from administration attended.

Table 70. Facility 5: Descriptive information for participants, day 1, 7:00 AM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RCA	C N A	M	27	CAUC	6	3
RCA	RES CARE AIDE	F	25	CAUC	1	1
RCA	RES CARE AIDE	F	55	CAUC	20	20
RCA	C N A	F	48	CAUC	17	3
RCA	RES CARE AIDE	F	58	CAUC	25	5
RCA	C N A	F	61		13	4
RN	RN	F	43	ASIAN	3.5	0

CAUC=Caucasian   CNA=Certified Nursing Asst.
RCA=Resident Care Aide

AGE: Range 25-61 years; mean 45.29; SD14.5 ; median 48 years.
YEARS WORKING WITH OLDER ADULTS: Range 1-25 years; mean 12.21; SD ; median 13
    yrs.
YEARS WORKING IN ALFs/PCHs: Range 0-20 years; mean 5.14; SD 6.77; median 3 years.
MALE:FEMALE RATIO: 1:6 (7 participants total, 14.3% male).

Table 71. Facility 5: Descriptive information for participants, day 1, 2:00 PM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RN	RN	M	24	CAUC	1	1
RN	RN	F	70	CAUC	33	0.5
RCA	C N A	F	47	CAUC	13	3
RCA	RES CARE AIDE	F	20	MIX RACE		0
RCA	RES CARE AIDE	F	47	CAUC	16	7
OFFICE	STAFF DEVELOPMENT	F	60	CAUC	27	0

CAUC=Caucasian   CNA=Certified Nursing Asst.
RCA=Resident Care Aide   MIX RACE=Mixed race

AGE: Range 20-70 years; mean 44.67; SD 19.61; median 47 years.
YEARS WORKING WITH OLDER ADULTS: Range 1-33 years; mean 18; SD12.49 ; median
    16 yrs.
YEARS WORKING IN ALFs/PCHs: Range 0-7 years; mean 1.92; SD 2.73; median 0.75 years.
MALE:FEMALE RATIO: 1:5 (6 participants total, 16.7% male).

Table 72. Facility 5: Descriptive information of participants, day 2, 7:00 AM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RN	RN	F	25	CAUC	1.5	1.5
RCA	RES CARE AIDE	F	20	CAUC	2	2
RCA	MED TECH	F	37	CAUC	14	14
RCA	RES CARE AIDE	F	PNTA	CAUC	6	6
RCA	MED TECH	F	61	CAUC	20	20
RCA	RES CARE AIDE/C N A	F	49	CAUC	12	4

CAUC=Caucasian   CNA=Certified Nursing Asst.
RCA=Resident Care Aide

AGE: Range 20-61 years, 1 PNTA; mean 38.4; SD 16.91; median 37 years.
YEARS WORKING WITH OLDER ADULTS: Range 1.5-20 years; mean 9.25; SD7.33 ;
      median 9 yrs.
YEARS WORKING IN ALFs/PCHs: Range 1.5-20 years; mean 7.92; SD 7.46; median 5 years.
MALE:FEMALE RATIO: 0:6 (6 participants total, 0% male).

Table 73. Facility 5: Descriptive information of participants, day 2, 2:00 PM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RN	RN	F	31	CAUC	4	3
RCA	MED TECH	F	55	CAUC	6	6
RCA	MED TECH	F	66	CAUC	13	13
RCA	MED TECH	F	35	CAUC	3	3
RCA	RES CARE ASST	F	44	CAUC	20	10
RCA	RES CARE ASST/C N A	F	21	CAUC	3	3
RCA	MED TECH	F	52	CAUC	30	13
RCA	RES CARE ASST/C N A	F	39	CAUC	11	3
RCA	RES CARE ASST/C N A	F	25	CAUC	2.5	2.5
RCA	RES CARE ASST	F	22	CAUC	0	0
RCA	MED TECH	F		CAUC	10	9
LPN	LPN	F	PNTA	CAUC	9	9
		F	37	CAUC	3	3

CAUC=Caucasian   CNA=Certified Nursing Asst.
RCA=Resident Care Aide

AGE: Range 21-66 years, 1 PNTA, 1left blank; mean 38.82; SD 14.34; median 37 years.
YEARS WORKING WITH OLDER ADULTS: Range 0-30 years; mean 8.81; SD 8.41; median
      6 yrs.
YEARS WORKING IN ALFs/PCHs: Range 0-13 years; mean 5.96; SD 4.33; median 3 years.
MALE:FEMALE RATIO: 0:13 (13 participants total, 0% male).

249

D.2.6 Data analysis for Facility 6.

This is a subsection contains descriptive information about all participants from facility 6, including descriptive statistics, comparative statistics on test performance, as a whole, and by job title, and Likert scores for immediately post-presentation and on follow up. Facility 6 is a family-owned personal care home. The program was mandatory, held in the afternoon to capture the departure of the 7-3 shift and arrival of the 3-11 shift. The employees here fill all job descriptions. In addition to providing resident care, they also function as kitchen staff and housekeeping staff.

Table 74. Facility 6: Descriptive information for participants, 2:45 PM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RCA	RES CARE AIDE	F	55	CAUC	15	15
RCA	RES CARE AIDE	F	64	NAT AM	15.5	10
RCA	RES CARE AIDE	F	43	CAUC	7	0
RCA	MED TECH/RES CARE AIDE	F	41	CAUC	15.5	15.5

CAUC=Caucasian   RCA=Resident Care Aide

AGE: Range 41-64 years; mean 50.75; SD 10.78; median 49 years.

YEARS WORKING WITH OLDER ADULTS: Range 7-15.5 years; mean 13.25; SD 4.17; median 15.25 yrs.

YEARS WORKING IN ALFs/PCHs: Range 0-15.5 years; mean 10.13; SD 7.19; median 12.5 years.

MALE:FEMALE RATIO: 0:4 (4 participants total, 0% male).

D.3　EDUCATIONAL PROGRAM – DAY OF PRESENTATION

This section contains information regarding the facilities, the participants, and statistical analyses of pre-tests, post-tests, follow up post-tests, Likert scales immediately post-presentation and follow up.

D.3.1　Learning objectives for educational program.

This subsection contains the learning objectives for the educational program.

OBJECTIVES FOR FALLS INSERVICE
Presenter: Mary T. Marchetti, PT, MS, GCS

OVERVIEW: This inservice program has been developed to provide training primarily to the non-professional caregiving staff in assisted living facilities and personal care homes on recognizing residents who are at increased fall risk and on preventing falls.   However, those working in other departments may benefit from this program, as they are often in a position to observe residents' behaviors, and may also contribute to Because experiential learning, in which the learners are engaged in active participation in the educational program, has been shown to increase learning and retention, this program will utilize a game to present some of the information. The format of this program will go as follows:

I.   Pre-test: The format of the pre-test will be true-false, multiple choice and short answer. The participants will have all of the questions on the test form, while the presenter shows a combination of slides with photos and slides with video that correspond to the test questions. Several of the test questions will have no slides, and the participants will answer those questions on their own. The pre-test will be collected at the conclusion of the test, prior to the remainder of the program.

II.   Background: A brief presentation will be provided in standard lecture format, utilizing slides with images to illustrate certain points. The concepts presented in this portion of the program will be applied later in the game, as well as on the follow up post-tests.

III.   Game utilizing TurningPoint® remotes: The next portion of this program entails a brief game. The participants will be divided into 2 teams based on whether their number on the sign in sheet was even or odd. All responses will be anonymous, and no one will know who is on his/her team. At the beginning of the game, the remote "clickers" will be registered by the TurningPoint® receiver/software, and the participants divided into groups by several unrelated questions. After the software has registered the "clickers," the game will commence. Slides with various images and videos will be shown, and the participants will be asked to vote on the best answers of the choices provided. Once everyone has responded, the total votes for each answer will be shown on screen, along with the correct answer(s), followed by an explanation and/or demonstration regarding why the correct choice(s) are correct, as well as why the other choice(s) are incorrect. The TurningPoint® software will keep track of the team responses, and will indicate which team has the most correct responses at the end of the game. Both teams will be provided with prizes at the end of the game.

IV.   Immediate post-test: Immediately after the game, a post-test with the same questions, however in a slightly different order, will be administered.

V.   One month post-test: Approximately one month after the presentation, a post-test with the slide images printed out will be completed by the participants during a scheduled shift.

VI.   Evaluation: Evaluation of the participants' learning will be based on differences in scores between the pre-test and subsequent post-tests. Evaluation of the program, including its usefulness from the perspective of the participants, will be based on Likert scales given immediately post-presentation and again approximately one month later.

OBJECTIVES FOR PROGRAM

At the end of this educational inservice, through question and answers, the participants will:

1.) Correctly identify the ideal floor surface to minimize fall risk in older adults/residents
2.) Correctly identify environmental hazards on floor/walking surfaces that contribute to increased risk of falls
3.) Correctly identify seating surfaces that either increase or decrease difficulty rising to stand, and thus may either increase or decrease risk of falls
4.) Correctly identify footwear that increases or decreases risk of falls
5.) Demonstrate understanding of age-related changes that may increase risk of falls in older adults/residents
6.) Correctly identify the proper vs. improper height for assistive devices (wheeled walkers, walkers, canes) for most older adults
7.) Correctly identify proper vs. improper use of assistive devices
8.) Correctly identify when it is necessary to notify a supervisor/person in charge regarding a resident's status or change in status that may contribute to increased risk of falls
9.) Correctly identify clothing hazards that contribute to increased risk of falls in older adults
10.) Correctly identify at least 3 environmental hazards that may contribute to increased risk of falls
11.) Apply the content of this program to interactions with residents, their families and their supervisors as needed to decrease risk of falls for all residents as well as individual residents (as demonstrated by appropriate communications among interested parties on an ongoing basis)

D.3.2   Data analysis for Facility 1.

This is a subsection contains descriptive information about all participants from Facility 1, including descriptive statistics, comparative statistics on test performance, as a whole, and by job title, and Likert scores for immediately post-presentation and on follow up. To review, Facility 1 is part of a larger company operating numerous senior communities. This particular facility has a personal care home section, and a skilled nursing facility section, both housed in the same building. The presentation included only the PCH staff. The presentation was given over two days, the first in the morning to capture staff leaving the 11-7 shift and arriving 7-3 shift. The second was given in the afternoon on the following day to capture the departing 7-3 shift and the arriving 3-11 shift. A change was made in the second day, with the supervisors from other departments requiring their staff to attend as well.

Table 75. Facility 1: Descriptive information of participants, Day 1, 7:30 AM

NUMBER	JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
1	RCA	RES CARE AIDE	F	55	AA	13	13
2	RCA	RES CARE AIDE	F	20	PNTA	1.5	1.5
3	RCA	RES CARE AIDE	F	47	MIX RACE	20	18

AA=African-American   PNTA=Prefer Not To Answer   MIX RACE=Mixed race

Table 76. Facility 1: Pre-test raw data. Day 1, 7:30 AM

FORM	JOB	1	2	3	4	5**	6	7**	8	9**	10	11	12	13	14	15	TOTAL
TEST		1	1	3	1	1	6	1	1	1	1	1	1	1	1	1	22
1	RCA	1	1	-2	1	1	4	1	1	1	1	1	1	0	1	0	13
2	RCA	0	0	0	0	1	1	1	1	0	0	1	0	0	0	1	6
3	RCA	0	1	-1	1	1	3	1	-1	1	1	1	0	1	1	1	11

"TEST" indicates the number of points possible for each question.
**Indicates the questions which inadvertently had the words "CORRECT ANSWER" next to the correct response on the multiple choice questions.

Table 77. Facility 1: Post-test raw data, Day 1, 7:30 AM

JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
TEST	3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
RCA	1	0	1	1	1	1	1	4	1	1	1	1	0	1	0	15
RCA	2	0	1	0	1	0	1	2	1	0	1	1	0	1	1	12
RCA	0	0	1	1	1	1	1	3	1	1	1	1	1	1	1	15

"TEST" indicates the number of points possible for each question.
Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (#1=#3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 78. Facility 1: Immediate post-program evaluation raw data, Day 1, 7:30 AM

#1	#2	#3	#4	#5	COMMENTS
5	5	5	5	5	
5	5	5	5	5	
5	4	4	4	4	

Evaluation questions corresponding with raw data scores:
Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.
STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

3.) I can use this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

4.) This information will help me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

Table 79. Facility 1: Descriptive information of participants, Day 2, 2:30 PM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
HOUSE	ENVIRON SERVICES	M	30	MIX RACE	5	0
HOUSE	HOUSEKEEPER	F	37	AA	4.5	4.5
HOUSE	HOUSEKEEPER	F	PTNA	AA	14	4.5
HOUSE	ENVIRON SERVICES	M	24	AA	6	6
HOUSE	HOUSEKEEPER/PORTER	M	53	CAUC	13	13
HOUSE	HOUSEKEEPER	F	PTNA		10	
LPN	LPN	F	26	CAUC	5	3
LPN	LPN	F	PTNA	AA	18	4
LPN	LPN	F	62	AA	30	15
LPN	LPN/UNIT SUPERVIS	F	61	CAUC	33	33
RCA	C N A	F	25	AA	4	3
RCA	MED TECH	F	33	CAUC	12	6
RCA	C N A	F	47	BLACK	17	7
RCA	MED TECH	F	53	AA	16	16
RCA	C N A	F		AA	25	18

AGE: Range24-62 years; mean 41; SD 14.62; median 41 years.
YEARS WORKING WITH OLDER ADULTS: Range 4-33 years ; mean 14.17; SD 9.27; median 13.
YEARS WORKING IN ALFs/PCHs: Range 0-33 years; mean 9.5; SD: 8.75; median 8 years.
MALE TO FEMALE RATIO: 3:12 (total participants 15; 20% male).

Table 80. Facility 1: Raw data from pre-test, Day 2, 2:45 PM

FORM	JOB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
	TEST	1	1	3	1	1	6	1	1	1	1	1	1	1	1	1	22
1	HOUSE	1	0	-1	1	1	3	0	1	1	1	1	0	1	1	1	12
2		0	0	-1	0	0	3	1	-1	0	0	1	0	1	0	0	4
3	HOUSE	1	0	-1	1	1	2	0	1	1	1	0	0	0	1	1	9
4	HOUSE	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	3
5	HOUSE	1	0	-1	0	0	1	1	1	0	0	1	0	1	0	0	5
6	LPN	0	0	-2	1	1	2	0	1	1	0	1	0	1	1	1	8
7		0	1	-1	1	0	2	0	1	1	0	1	0	1	1	1	9
8		1	0	-1	1	0	4	0	-1	0	1	1	0	1	1	1	9
9	RCA	0	0	-2	1	1	4	1	0	1	0	1	0	1	1	1	10
10	RCA	0	1	-1	0	0	5	1	1	1	0	1	0	1	1	1	12
12	RCA	0	0	-1	1	1	5	1	-1	1	1	0	0	1	1	0	10
13		1	0	-1	1	0	2	1	1	1	1	0	0	0	1	0	8
14		0	0	-1	1	0	2	1	1	1	1	1	0	0	1	1	9
28	RCA	0	0	0	1	0	1	0	1	1	0	1	0				5
no #	RCA	1	0	-1	1	0	3	1	1	1	0	1	0	1	1	1	11

"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.

Table 81. Facility 1: Raw data from post-test, Day 2, 2:45 PM

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
	TEST	3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1	HOUSE	1	1	1	1	1	1	1	3	1	1	0	1	1	1	1	16
3	HOUSE	1	1	1	1	1	1	1	2	1	1	1	1	0	1	1	15
4	HOUSE	1	0	1	1	1	-1	1	1	1	0	1	1	0	1	0	9
6		1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17
7		1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	13
8		1	1	1	0	0	-1	1	4	1	1	0	1	1	1	1	13
9		-1	1	1	1	1	-1	1	3	1	1	1	1	1	1	1	13
10		2	1	0	1	0	-1	1	4	1	1	1	1	1	0	1	14
11	RCA	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17
12	RCA	1	1	1	0	1	-1	1	5	1	1	1	1	1	1	1	16
14		-1	1	1	0	1	-1	1	2	1	1	0	1	0	0	0	7
28		1	1	1	0	1	-1	1	4	1	1	1	1	0	1	1	14
No #	HOUSE	2	0	1	0	1	-2	1	2	1	1	0	1	1	1	0	10
No #	HOUSE	-1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	11

"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.   Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 82. Facility 1: Immediate post-presentation evaluation, Day 2, 2:45 PM

#1	#2	#3	#4	#5	COMMENTS
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
4	5	5	5	5	
4	4	5	4	5	
4	5	4	4	4	
0	1	0	0	0	

Evaluation questions corresponding with raw data scores:
Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.
STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

3.) I can use this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

4.) This information will help me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

D.3.3 Data analysis for Facility 2.

This is a subsection contains descriptive information about all participants from facility 2, including descriptive statistics, comparative statistics on test performance, as a whole, and by job title, and Likert scores for immediately post-presentation. To review, Facility 2 is part of a larger company operating numerous senior communities. This particular facility has a personal care home section, and a skilled nursing facility section, both housed in the same building. The presentation included only the PCH staff. The presentation was given over two days, the first in the morning to capture staff leaving the 11-7 shift and arriving 7-3 shift. The second was given in the afternoon on the following day to capture the departing 7-3 shift and arriving 3-11 shift. A change was made in the second day, with the supervisors from other departments requiring their staff to attend as well.

Table 83. Facility 2: Descriptive information for participants, scheduled from 2:00 PM – 3:00 PM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RCA	Nrsg Asst	F	26	Cauc	5	5
RCA	Nrsg Asst	M	31	Cauc/Nat Am	8	
RCA	Nrsg Asst	F	27	Cauc	2	0.33
RCA	Medication Aide	F	32	Cauc	0	0
RCA	Nrsg Asst	F	PNTA	Hispanic	3	3
RCA	Nrsg Asst	F	19	Cauc	1.5	1.5
OFFICE	Admin Asst	F	42	Cauc	13	13
OFFICE	Administrator	F	52	Cauc	12	12
MAINT	Maintenance	M	60	Cauc	12	12
LPN	LPN	F	61	Cauc	6.5	6
LPN	LPN	F	PNTA	Cauc	30.5	8.5
KITCHEN	Dietary Mgr	M	55	Cauc	14	13
KITCHEN	Dietary	PNTA	PNTA		15	15
KITCHEN	Cook	M	55	Cauc	13	2
KITCHEN	Chef	M	38	Cauc	1.5	1.5
HOUSE	Housekeeper	F	61	Cauc	8.5	8.5
HOUSE	Lead Housekeeper	F	PNTA	Cauc/PNTA	20	12
HOUSE	Housekeeper	F		Cauc	7	3.5
DR	Dining Rm Mgr	M	33	AA	0.06	0.06
DR	Lead Dietary Server	M	80	Cauc	15	15
DR	Food Svc Worker	F	18	Mix Race	1	1
ACTIVITY	Activities	F	PNTA	Cauc	15	15
	Nursing	F	PNTA	Cauc	14	14

AA=African-American   CAUC=Caucasian
PNTA=Prefer Not To Answer   RCA=Resident Care Aide
MIX RACE=Mixed race   DR=Dining Room

Table 84. Facility 2: Pre-test raw data

FORM	JOB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
	TEST	**1**	**1**	**3**	**1**	**1**	**6**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**22**
2		1	0	-1	1	1	4	1	1	1	1	1	0	1	1	0	13
3	OFFICE	1	0	-2	1	0	4	1	1	0	0	1	0	1	1	0	9
4		0	0	-1	1	0	3	0	1	0	1	1	0	1	0	0	7
5	RCA	1	0	0	1	0	4	1	0	-1	1	1	0	1	1	1	11
6	HOUSE	1	0	1	1	1	4	0	1	1	1	1	0	1	1	1	15
7	ACTIV	1	0	-1	1	1	3	0	1	1	1	1	0	1	1	0	11
8		1	0	-1	1	1	1	0	1	1	1	0	0	0	1	1	8
9	OFFICE	1	0	-1	1	1	3	1	1	1	1	0	0	1	1	0	11
10	KITCHEN	1	0	-1	1	1	4	1	1	1	1	1	1	1	1	0	14
11		0	0	1	1	0	4	1	1	1	1	1	0	1	1	1	14
12	HOUSE	1	0	0	1	1	3	0	1	1	1	1	0	1	1	1	13
13	HOUSE	0	0	-1	1	1	2	0	1	0	0	1	0	0	1	1	7
14		1	0	-1	1	1	2	1	-1	1	1	1	0	1	1	1	10
15	KITCHEN	1	1	0	0	1	3	1	1	1	0	0	1	1	1	0	12
16		0	1	-1	1	-1	2	1	1	0	1	0	0	1	1	1	8
17	KITCHEN	0	0	1	1	1	3	0	1	0	1	0	1	1	1	1	12
18		1	1	-1	1	0	0	1	1	0	0	0	1	0	1	0	6
19	RCA	0	1	0	1	1	3	1	1	1	1	1	0	1	1	1	14
2122	KITCHEN	0	0	-1	1	1	2	1	-1	0	0	1	1	1	1	0	7
24a		0	0	-1	1	0	2	1	1	0	1	1	0	1	0	0	7
24b	RCA	0	0	1	1	1	3	1	-1	1	1	1	0	1	1	1	12
25	RCA	0	0	-1	1	1	3	0	-1	1	1	0	1	1	1	0	8
26		0	0	-1	1	1	3	1	1	1	1	1	0	1	1	1	12
29	KITCHEN	1	0	1	0	0	3	1	1	1	1	1	0	0	1	1	12
no #		1	0	-1	0	1	1	1	-1	1	0	0	0	0	1	1	5

"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points
received by participant for that question.

Table 85. Facility 2: Immediate post-presentation post-test raw scores

FORM	JOB	1=3 PRE	2=1 PRE	3= 4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
	TEST	**3**	**1**	**1**	**1**	**1**	**1**	**1**	**6**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**22**
2	RCA	1	0	1	0	1	1	1	2	1	1	1	1	1	1	1	**14**
3	OFFICE	0	0	1	1	1	-1	1	2	1	1	1	1	1	1	1	**12**
4		1	0	1	0	1	1	1	3	1	1	1	1	1	0	1	**14**
5	RCA	0	0	1	1	1	-3	1	4	1	1	1	1	1	1	1	**12**
7	ACTIV	-1	1	1	0	1	1	0	2	1	1	1	1	0	1	1	**11**
11		1	0	1	0	0	-1	1	3	1	1	1	1	1	1	1	**12**
12	HOUSE	0	1	1	0	1	1	0	1	1	1	1	1	0	1	1	**11**
13	HOUSE	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	**13**
16	ans only3	-1	1	1													**1**
19	RCA	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	**11**

"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 86. Facility 2: Immediate post-presentation evaluation, raw data

#1	#2	#3	#4	#5	COMMENTS
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	3	3	3	
4	4	4	4	3	
4	4	4	4	4	
4	3	3	3	3	
4	4	3	3	3	
5	4	3	3	3	
4	4	4	4	4	
4	4	4	4	3	
3	3	3	3	3	
4	5	5	4	4	
5	5	4	4	4	
5	4	4	4	4	
4	4	4	4	4	

Evaluation questions corresponding with raw data scores:

Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.
STRONGLY DISAGREE   STRONGLY AGREE
0-------------1----------------2----------------3---------------4----------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE
0-------------1----------------2----------------3---------------4----------------5

3.) I can use this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE
0-------------1----------------2----------------3---------------4----------------5

4.) This information will help me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE
0-------------1----------------2----------------3---------------4----------------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE
0-------------1----------------2----------------3---------------4----------------5

D.3.4 Data analysis for Facility 3.

This is a subsection contains descriptive information about all participants from facility 3, including descriptive statistics, comparative statistics on test performance, as a whole, and by job title, and Likert scores for immediately post-presentation and on follow up. To review, Facility 3 is part of a larger company operating numerous senior communities. This particular facility has independent living, a personal care home section, and a skilled nursing facility. The presentation included only the PCH staff. The presentation was given once in the afternoon to capture the departing 7-3 shift and the arriving 3-11 shift. The program was voluntary for all participants. Individuals from various departments attended.

Table 87. Facility 3: Descriptive information for participants

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
ACTIVITY	Activities Coord	F	22	Cauc	5	5
DRIVER	Driver	F	59	Mix Race	16	16
HOUSE	Envir Serv Aide	F	PNTA	Cauc	5.5	5.5
HOUSE	Housekeeper	F	53	na	6.5	6.5
HOUSE	Housekeep/server	M	53	Cauc	20	10
KITCHEN	Dishwasher	F	54	Cauc	10	7
KITCHEN	Cook	M	50	Asian	4	4
KITCHEN	Chef	PTNA	PTNA	PTNA	13.75	13.75
LPN	LPN	F	25	Cauc	0	0
LPN	LPN	F	30	Cauc	2	2
LPN	LPN	F	29	Cauc	4	3
LPN	LPN	F	56	Cauc	26	10
LPN	LPN	F	65	Cauc	17	13
MAINT	Maintenace Tech	M	54	Cauc	8	8
OFFICE	Receptionist	F	PTNA	Cauc	1.25	1.25
OFFICE	Receptionist	F	69	Cauc	3	3
OFFICE	Receptionist	F	72	Cauc	4	4
OFFICE	Administrator	F	60	Cauc	20	13
OFFICE	Admin Asst	F	67	Cauc	20	20
RCA	Nrsg Asst	F	PNTA	Cauc	0.75	0.75
RCA	Nrsg Asst	F	22	Cauc	1.5	1.5
RCA	Nrsg Asst	F	21	Cauc	2.5	1.5
RCA	Nrsg Asst	F	60	Nat Am	22	1.5
RCA	Nrsg Asst	F	20	Cauc	2.5	2.5
RCA	Nrsg Asst	F	PTNA	Cauc	3	3
RCA	Med Tech	F	42	Cauc	11	8.5
RCA	C N A	F	50	Cauc	20	10
RCA	Medication Tech	F	54	Cauc	20	20
RCA	Medication Aide	F	62	Cauc	na	na
	Nrsg	F	44	Cauc	4	4

AA=African-American   CAUC=Caucasian
PNTA=Prefer Not To Answer   RCA=Resident Care Aide
MIX RACE=Mixed race   CNA=Certified Nursing Assistant

Table 88. Facility 3: Pre-test raw scores

FORM	JOB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
	TEST	1	1	3	1	1	6	1	1	1	1	1	1	1	1	1	22
1	RCA	1	0	0	1	1	3	1	0	1	1	0	0	1	1	1	12
2		1	0	-1	1	1	1	0	1	1	1	1	0	0	1	1	9
3	ACTIV	1	0	-2	1	0	3	0	1	0	1	1	0	1	1	1	9
4	RCA**	NA	NA	1	1	0	4	1	0	1	1	0	1	1	0	1	12 of 21
5	LPN	1	0	-3	1	0	4	1	-1	1	1	1	0	1	1	1	9
6	OFFICE	1	0	0	1	0	4	1	1	1	1	1	0	0	1	0	12
7	RCA	1	0	-1	0	0	2	1	1	1	1	1	0	0	0	0	7
8	DRIVER	1	0	-1	1	1	4	1	1	1	1	1	0	1	1	0	13
9	MAINT	0	0	-2	0	0	4	0	1	0	1	0	0	1	1	1	7
10	OFFICE	0	0	-3	1	0	2	0	1	0	1	1	0	1	1	0	5
11	NRSG	1	0	0	1	1	4	1	1	1	1	0	0	1	1	1	14
12	NRSG	1	1	0	1	0	5	0	1	0	1	0	0	1	1	0	12
13	NRSG	0	0	1	1	1	4	1	-1	1	1	1	0	1	1	1	13
14	NRSG**	NA	NA	NA	NA	0	0	0	1	1	1	1	NA	NA	NA	NA	(4) of 12
15	NRSG	1	0	2	0	0	1	1	-1	1	1	0	0	1	1	1	9
16	OFFICE	1	1	-1	1	1	3	0	1	0	1	0	1	1	1	0	11
17	RCA	1	0	-1	1	0	3	1	1	1	1	1	0	1	1	1	12
18	OFFICE	0	0	1	1	1	4	0	1	0	0	0	1	0	1	0	10
19	RCA	1	0	0	0	0	4	0	1	1	1	0	1	1	1	0	11
20	OFFICE	1	0	0	1	1	3	1	1	1	1	1	0	0	1	1	13
21	RCA	0	0	1	1	0	3	1	-1	1	1	1	0	0	1	1	10
22		1	0	-1	1	0	3	1	-1	0	1	1	0	1	1	0	8
23		1	0	0	1	0	4	0	-1	1	1	1	1	1	1	1	12
24	HOUSE	1	0	1	0	1	2	1	1	1	1	0	1	0	1	0	11
25	HOUSE	1	0	1	1	1	1	0	1	1	1	1	1	1	1	0	12
26		1	0	-1	1	0	3	0	1	1	0	1	1	1	1	0	10
27	KITCHEN	1	0	-1	0	0	2	0	1	1	1	0	1	1	1	1	9
28		1	0	-1	1	1	1	1	1	0	0	0	1	1	0	0	7
29	NRSG	0	1	0	1	0	3	1	-1	1	1	0	0	1	1	1	10
30	NRSG**	NA	NA	NA	NA	NA	NA	NA	NA	1	1	1	0	1	1	0	5 OF 7

"NRSG" = Participant identified self as "nursing" department, but not specific job.
"TEST" = Number of points possible for each question and total test.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
** indicates participant came in late and/or left during test, therefore test not complete. "NA" indicates questions left blank due to absence.

Table 89. Facility 3: Immediate post-presentation post-test raw scores

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
	TEST	3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1	RCA	2	1	1	1	1	1	1	5	1	1	1	1	1	1	1	20
2		0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	13
3	ACT	3	1	1	1	1	1	1	4	0	1	1	1	1	1	1	19
4	RCA	2	0	1	1	0	1	1	2	1	1	1	1	1	1	1	15
5	LPN	1	0	1	1	1	1	1	5	1	1	1	1	1	1	1	18
6	OFFICE	1	1	1	1	1	1	1	3	1	1	1	1	0	1	1	16
7	RCA	1	1	1	0	1	1	1	3	1	1	1	1	1	0	0	14
8	DRIVER	0	1	1	0	1	1	1	3	1	1	1	1	1	1	1	15
9	MAINT	0	1	1	0	0	-2	1	3	1	0	0	1	1	1	1	9
10	OFFICE	1	1	1	0	1	1	1	3	1	1	1	1	1	1	1	16
11	NRSG	2	0	1	1	1	1	1	4	1	1	1	1	1	1	1	18
12	NRSG	1	1	1	1	1	1	1	5	1	1	1	1	1	1	1	19
13	NRSG	2	0	1	1	1	-1	1	4	1	1	1	1	1	1	1	16
14	NRSG	0	0	1	1	1	1	1	2	1	1	1	1	1	1	1	14
15	NRSG	3	0	1	0	1	-1	1	3	1	1	1	1	1	1	1	15
16	OFFICE	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	14
17	RCA	2	0	1	0	1	1	1	4	1	1	1	1	1	1	1	17
18	OFFICE	0	0	1	1	1	1	1	3	0	0	1	1	1	1	0	12
19	RCA	0	0	1	0	1	1	1	0	1	1	0	1	1	1	1	10
20	OFFICE	0	1	1	1	1	1	1	4	1	1	1	1	0	1	1	16
21	RCA	1	0	1	1	1	-1	1	5	1	1	0	1	1	1	1	15
22		1	1	1	0	1	-2	1	0	1	1	0	1	1	1	1	9
23		0	1	1	1	1	-2	1	4	1	1	0	1	0	1	1	12
24	HOUSE	2	1	0	0	0	1	1	3	1	1	1	1	0	1	0	13
25	HOUSE	2	0	1	1	1	1	1	2	1	1	1	0	1	1	1	15
26		1	0	1	1	1	1	1	3	1	1	1	1	0	1	1	15
27	KITCHEN	0	0	0	1	1	1	1	3	0	1	1	1	1	1	1	13
29	NRSG	0	0	1	1	1	1	1	4	1	1	1	1	1	1	1	16
30	NRSG	0	1	0	1	0	1	1	3	1	1	1	1	1	0	1	13

"NRSG" = Participant identified self as "nursing" department, but not specific job.

"TEST" indicates the number of points possible for each question.

Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.

Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=#3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Participant #28 did not complete post-test.

Table 90. Facility 3: Immediate post-presentation program evaluation raw scores

#1	#2	#3	#4	#5	COMMENTS
5	5	5	5	5	Great - thanks for coming
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
4	4	4	4	4	
4	4	4	4	4	
5	4	4	4	5	
	5	5	5	5	
5	5	3	5	5	
5	4	5	5	4	
5	4	5	5	5	
5	3	4	4	5	
5	4	1	3	4	
4	4	5	5	5	
5	4	5	5	5	

Evaluation questions corresponding with raw data scores:
Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.
STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

3.) I can use this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

4.) This information will help me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

D.3.5   Data analysis for Facility 4.

This is a subsection contains descriptive information about all participants from facility 4, including descriptive statistics, comparative statistics on test performance, as a whole, and by job title, and Likert scores for immediately post-presentation and on follow up. Facility 4 is part of a larger company operating numerous senior communities. This particular facility has independent living, a personal care home section, and a skilled nursing facility. The presentation included only the PCH staff. The presentation was given once in the afternoon to capture the departing 7-3 shift and arriving 3-11 shift. The program was mandatory for all participants. Resident care aides and nurses attended.

Table 91. Facility 4: Descriptive information for participants, 2:30 PM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RCA	NRSG ASST	F	38	CAUC	20	15
RCA	MED TECH	F	33	CAUC	10.5	7.5
RCA	MED TECH	F	22	CAUC	3	3
RCA	NRSG ASST	F	20	CAUC		0.06
RCA	RES CARE AIDE	F	34	CAUC	10	4
RCA	NRSG ASST	F	51	CAUC	10	0.06
RCA	RES CARE AIDE	F	22	CAUC	5	1
RCA	MED TECH	F	25	AA	8	8
RCA	NRSG ASST			MIX RACE	23	
OFFICE	DIRECTOR OF RES CARE	F	39	CAUC	23	23
LPN	LPN	F	30	CAUC	2	2
LPN	LPN - CHG NURSE	F	36	CAUC	6	6
		F	43	ASIAN	12	12

AA=African-American   CAUC=Caucasian
PNTA=Prefer Not To Answer   RCA=Resident Care Aide
MIX RACE=Mixed race

Table 92. Facility 4: Pre-test raw scores data

FORM	JOB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
		1	1	3	1	1	6	1	1	1	1	1	1	1	1	1	22
1	NRSG	0	0	1	1	1	4	1	1	1	1	1	1	1	1	0	15
2	RCA	0	0	1	1	1	4	1	1	0	1	0	0	0	1	1	12
3	RCA	1	0	1	1	0	4	1	-1	1	1	1	1	0	1	0	12
4	RCA	0	0	1	1	1	2	0	1	1	0	0	0	1	0	0	8
5	RCA	1	0	1	1	1	5	1	1	0	1	1	0	1	1	0	15
6	RCA	1	0	1	1	1	5	1	1	1	1	1	0	1	1	1	17
7	ADMIN	0	0	1	0	0	4	1	-1	1	0	1	0	1	1	0	9
8	NRSG	1	0	3	1	1	4	1	1	1	1	1	1	1	1	1	19
9		1	0	1	1	1	4	1	1	1	1	1	0	0	1	1	15
10	RCA	0	0	1	0	0	4	1	1	1	1	1	0	1	0	0	11
11	NRSG	1	1	1	1	0	3	0	-1	1	1	0	0	1	1	1	11
12	**	NA	NA	NA	1	1	5	0	1	1	1	1	0	1	1	1	(14 of 17)

"NRSG" = Participant identified self as "nursing" department, but not specific job.
"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
** indicates participant came in late and/or left during test, therefore test not complete. "NA" indicates questions left blank due to absence.

Table 93. Facility 4: Immediate post-program post-test raw scores data

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
		3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1	NRSG	0	0	1	0	1	1	1	3	2	2	2	2	1	1	1	18
2	RCA	1	1	1	0	1	-1	1	4	1	1	1	1	1	1	1	15
3	RCA	3	1	1	1	1	-1	1	6	1	1	1	1	0	1	1	19
4	RCA	-1	1	1	0	1	-1	0	2	1	0	1	1	0	0	1	7
5		0	1	1	0	1	1	1	4	1	1	1	1	1	1	1	16
6	RCA	1	1	1	0	1	1	1	4	1	1	1	1	1	1	1	17
7	ADMIN	1	0	1	1	1	1	1	3	1	0	1	1	1	1	1	15
8	NRSG	2	1	1	0	1	1	1	2	1	1	1	1	0	1	1	15
9		2	1	1	1	1	1	1	2	1	1	1	0	0	1	1	15
10	RCA	2	0	0	1	1	1	1	4	1	1	1	1	1	0	0	15
11		2	1	1	1	1	1	0	2	1	1	1	1	1	1	1	16
12	NRSG	1	0	1	1	1	1	1	5	1	1	1	1	1	1	1	18
13	RCA	1	1	1	1	1	-1	1	5	0	1	1	1	1	1	1	16
14	RCA	1	0	1	1	1	-3	1	6	1	1	1	1	1	1	1	15
15	RCA	1	1	1	0	1	-1	1	4	1	1	1	1	1	1	1	15

"NRSG" = Participant identified self as "nursing" department, but not specific job.
"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 94. Facility 4: Immediate post-presentation program evaluation raw data

#1	#2	#3	#4	#5	COMMENTS
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
4	4	4	4	4	
5	4	4	4	4	
3	3	3	4	4	
5	4	5	5	5	

Evaluation questions corresponding with raw data scores:
Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.
STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

3.) I can use this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

4.) This information will help me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------5

D.3.6 Data analysis for Facility 5.

This is a subsection contains descriptive information about all participants from facility 2, including descriptive statistics, comparative statistics on test performance, as a whole, and by job title, and Likert scores for immediately post-presentation and on follow up. To review, Facility 5 is part of a larger company operating numerous senior communities. This particular facility has independent living, a personal care home section, and a skilled nursing facility. The presentation included only the PCH staff. The presentation was given four times over two separate days, twice in the morning to capture the departing 11-7 shifts, and twice in the afternoon to capture the departing 7-3 shift and arriving 3-11 shift. The program was mandatory for all participants. Resident care aides, nurses and some individuals from administration attended.

Table 95. Facility 5: Descriptive information for participants, day 1, 7:00 AM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RCA	C N A	M	27	CAUC	6	3
RCA	RES CARE AIDE	F	25	CAUC	1	1
RCA	RES CARE AIDE	F	55	CAUC	20	20
RCA	C N A	F	48	CAUC	17	3
RCA	RES CARE AIDE	F	58	CAUC	25	5
RCA	C N A	F	61		13	4
RN	RN	F	43	ASIAN	3.5	0

CAUC=Caucasian   CNA=Certified Nursing Asst.
RCA=Resident Care Aide

Table 96. Facility 5: Pre-test raw scores data, day 1, 7:00 AM

FORM	JOB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
	TEST	1	1	3	1	1	6	1	1	1	1	1	1	1	1	1	22
1	RCA	0	1	2	0	0	3	1	-1	1	1	0	1	0	1	1	11
2	RCA	0	1	0	1	0	5	1	1	1	0	1	0	1	1	0	13
3	RCA	0	1	0	1	0	6	1	1	1	1	1	1	1	1	1	17
4	RCA	0	1	1	1	0	4	1	1	1	1	1	1	1	1	0	15
5	RCA	0	1	-1	1	1	2	1	-1	1	1	1	0	1	1	1	10
6	RCA	0	0	1	1	1	3	0	1	1	1	1	0	1	1	1	13
7	RN	0	0	-1	1	0	3	0	1	1	1	0	1	0	1	1	9

"TEST" = Number of points possible for each question and total test.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.

Table 97. Facility 5: Immediate post-program post-test raw scores data, day 1, 7:00 AM

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
		3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1	RCA	2	0	1	1	1	1	1	2	1	1	1	1	0	1	1	15
2	RCA	-2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	13
3	RCA	2	0	1	1	1	1	1	5	1	1	1	1	1	1	1	19
4	RCA	-1	0	1	1	1	1	1	4	1	1	1	1	0	1	1	14
5	RCA	1	1	1	0	1	1	1	2	1	1	1	1	0	0	1	13
6	RCA	1	1	1	0	1	1	0	4	1	1	1	1	1	1	1	16
7	RN	1	0	1	1	1	1	1	4	1	1	1	1	1	1	1	17

"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=#3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 98. Facility 5: Immediate post-presentation evaluation raw scores data, day 1, 7:00 AM

#1	#2	#3	#4	#5	COMMENTS
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	

Evaluation questions corresponding with raw data scores:
Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.
STRONGLY DISAGREE   STRONGLY AGREE
0--------------1---------------2---------------3---------------4---------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1---------------2---------------3---------------4---------------5

3.) I can use this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1---------------2---------------3---------------4---------------5

4.) This information will help me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1---------------2---------------3---------------4---------------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1---------------2---------------3---------------4---------------5

Table 99. Facility 5: Descriptive information for participants, day 1, 2:00 PM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RN	RN	M	24	CAUC	1	1
RN	RN	F	70	CAUC	33	0.5
RCA	C N A	F	47	CAUC	13	3
RCA	RES CARE AIDE	F	20	MIX RACE		0
RCA	RES CARE AIDE	F	47	CAUC	16	7
OFFICE	STAFF DEVELOPMENT	F	60	CAUC	27	0

CAUC=Caucasian   CNA=Certified Nursing Asst.
RCA=Resident Care Aide   MIX RACE=Mixed race

Table 100. Facility 5: Pre-test raw scores data, day 1, 2:00 PM

FORM	JOB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
	TEST	1	1	3	1	1	6	1	1	1	1	1	1	1	1	1	22
1		0	1	1	0	1	3	1	1	1	1	1	1	1	1	1	15
2		0	0	0	1	0	3	0	1	1	1	0	0	1	1	0	9
3	RCA	0	0	0	1	0	1	1	1	0	1	1	0	1	0	1	8
4	RCA	0	0	0	1	1	2	1	1	1	0	1	0	0	1	1	10
5	OFFICE	1	1	0	1	0	5	1	-1	1	0	1	0	1	1	1	13
6		1	1	-1	1	0	4	1	1	1	1	1	1	1	1	1	15

"TEST" = Number of points possible for each question and total test.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.

Table 101. Facility 5: Immediate post-presentation post-test raw scores data, day 1, 2:00 PM

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
		3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1		1	0	0	1	1	1	1	3	1	1	1	1	1	1	1	15
2		1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17
3	RCA	1	0	1	0	1	1	1	1	1	1	1	1	0	1	1	12
4	RCA	1	0	1	1	1	1	1	3	1	1	1	1	0	1	1	15
5	OFFICE	1	0	1	1	1	-2	1	3	1	1	1	1	1	1	1	13
6		-1	0	1	1	1	-1	1	5	1	1	1	1	1	1	1	14

"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 102. Facility 5: Immediate post-program evaluation raw scores data, day 1, 2:00 PM

#1	#2	#3	#4	#5	COMMENTS
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
4	5	4	4	4	
5	4	5	4	5	

Evaluation questions corresponding with raw data scores:
Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.
STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

3.) I can use this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

4.) This information will help me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

Table 103. Facility 5: Descriptive information of participants, day 2, 7:00 AM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RN	RN	F	25	CAUC	1.5	1.5
RCA	RES CARE AIDE	F	20	CAUC	2	2
RCA	MED TECH	F	37	CAUC	14	14
RCA	RES CARE AIDE	F	PNTA	CAUC	6	6
RCA	MED TECH	F	61	CAUC	20	20
RCA	RES CARE AIDE/C N A	F	49	CAUC	12	4

CAUC=Caucasian   CNA=Certified Nursing Asst.
RCA=Resident Care Aide

Table 104. Facility 5: Pre-test raw scores data, day 2, 7:00 AM

FORM	JOB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
	TEST	1	1	3	1	1	6	1	1	1	1	1	1	1	1	1	22
1	RCA	1	0	-1	1	0	4	0	1	1	1	1	0	1	1	0	11
2	RCA	0	0	-1	1	0	3	1	1	1	1	0	0	0	1	1	9
3	RCA	0	0	-1	0	0	2	1	1	1	1	1	0	1	1	1	9
4	RCA	0	0	-1	1	1	1	0	1	0	0	0	0	1	1	0	5
5	RN	0	1	2	1	1	5	0	1	1	1	1	0	1	1	0	16
6	RCA	0	0	0	1	0	3	0	1	0	0	0	0	1	1	1	8

"TEST" = Number of points possible for each question and total test.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.

Table 105. Facility 5: Immediate post-presentation post-test raw scores data, day 2, 7:00 AM

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
		3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1	RCA	-1	0	1	1	1	1	1	4	1	1	1	1	0	1	1	14
2	RCA	0	0	1	0	1	-1	1	4	1	1	1	1	1	1	1	13
3	RCA	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	18
4	RCA	-1	1	1	0	1	1	0	2	1	0	0	1	1	1	1	10
5	RN	3	0	1	1	1	1	0	4	1	1	1	1	1	1	1	18
6	RCA	0	0	1	1	1	1	1	2	1	1	1	1	1	1	1	14

"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 106. Facility 5: Immediate post-presentation evaluation raw scores data, day 2, 7:00 AM

#1	#2	#3	#4	#5	COMMENTS
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
4	4	4	5	5	

Evaluation questions corresponding with raw data scores:
Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.
STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

3.) I can use this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

4.) This information will help me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

Table 107. Facility 5: Descriptive information of participants, day 2, 2:00 PM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RN	RN	F	31	CAUC	4	3
RCA	MED TECH	F	55	CAUC	6	6
RCA	MED TECH	F	66	CAUC	13	13
RCA	MED TECH	F	35	CAUC	3	3
RCA	RES CARE ASST	F	44	CAUC	20	10
RCA	RES CARE ASST/C N A	F	21	CAUC	3	3
RCA	MED TECH	F	52	CAUC	30	13
RCA	RES CARE ASST/C N A	F	39	CAUC	11	3
RCA	RES CARE ASST/C N A	F	25	CAUC	2.5	2.5
RCA	RES CARE ASST	F	22	CAUC	0	0
RCA	MED TECH	F		CAUC	10	9
LPN	LPN	F	PNTA	CAUC	9	9
		F	37	CAUC	3	3

CAUC=Caucasian   CNA=Certified Nursing Asst.
RCA=Resident Care Aide

Table 108. Facility 5: Pre-test raw scores data, day 2, 2:00 PM

FORM	JOB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
	TEST	1	1	2	1	1	6	1	1	1	1	1	1	1	1	1	21
1	RCA	1	0	0	1	1	2	1	1	0	1	1	0	1	1	1	12
2	RCA	1	0	-3	1	0	3	1	1	0	0	0	1	1	1	0	7
3		1	0	1	1	1	3	1	1	1	1	1	0	1	1	1	15
4		1	0	1	1	1	2	1	1	1	0	1	0	0	1	0	11
5		1	0	0	1	1	2	1	1	1	1	1	0	0	1	0	11
6	RCA	1	0	1	0	0	1	0	1	1	1	1	1	0	1	0	9
7	RCA	0	1	-2	1	1	4	1	1	1	0	1	0	1	1	1	12
8		1	0	0	0	0	6	0	1	1	1	0	0	1	1	1	13
9	RCA	1	0	-1	1	0	3	1	1	1	1	1	0	1	1	0	11
10		1		-1	1	0	2	1	-1	1	0	1	1	1	1	1	9
11	RCA	1	0	1	1	0	4	1	-1	1	1	1	1	1	1	1	14
12	RCA	1	0	1	1	0	1	1	1	1	0	0	1	1	1	0	10
13	RCA**																
14	**																

"TEST" = Number of points possible for each question and total test.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
** indicates individuals came late to presentation, no pre-test scores.

Table 109. Facility 5: Immediate post-presentation post-test raw scores data, day 2, 2:00 PM

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
	TEST	3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1	RCA	3	0	1	1	1	0	1	3	1	1	1	1	1	1	1	17
2	RCA	0	1	1	1	1	-2	4	1	1	1	1	1	1	1	1	14
3		1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17
4		1	0	1	1	1	-1	0	3	1	0	1	1	0	1	1	11
5	**	1	1	1	0	1	1	1	2	1	1	1	1	NA	NA	NA	(12 out of 19)
6	RCA	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	13
7	RCA	2	0	1	1	1	1	1	4	1	1	1	1	1	1	1	18
8		2	1	1	1	1	1	1	3	1	1	1	1	1	1	1	18
9	RCA	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17
10		1	0	0	1	0	1	1	3	1	1	1	1	1	1	1	14
11	RCA	1	0	1	1	1	-1	1	4	1	1	1	1	1	1	1	15
12	RCA	3	0	1	1	1	-3	1	4	1	1	1	1	1	1	1	15
13	RCA	2	0	0	1	1	1	1	1	1	1	1	1	0	1	1	13
14		1	1	1	0	0	1	1	2	1	1	1	1	1	1	1	14

**Left before completing test.
"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 110. Facility 5: Immediate post-presentation evaluation raw scores data, day 2, 2:00 PM

#1	#2	#3	#4	#5	COMMENTS
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
5	5	5	5	5	
4	4	4	5	5	
4	4	4	4	4	
3	3	3	3	3	

Evaluation questions corresponding with raw data scores:
Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.
STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

3.) I can use this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

4.) This information will help me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

D.3.7 Data analysis for Facility 6.

This is a subsection contains descriptive information about all participants from facility 6, including descriptive statistics, comparative statistics on test performance, as a whole, and by job title, and Likert scores for immediately post-presentation and on follow up. Facility 6 is a family-owned personal care home. The program was mandatory, held in the afternoon to capture the departure of the 7-3 shift and arrival of the 3-11 shift. The employees here fill all job descriptions. In addition to providing resident care, they also function as kitchen staff and housekeeping staff.

Table 111. Facility 6: Descriptive information for participants, 2:45 PM

JOB	TITLE	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RCA	RES CARE AIDE	F	55	CAUC	15	15
RCA	RES CARE AIDE	F	64	NAT AM	15.5	10
RCA	RES CARE AIDE	F	43	CAUC	7	0
RCA	MED TECH/RES CARE AIDE	F	41	CAUC	15.5	15.5

CAUC=Caucasian   NAT AM=Native American
RCA=Resident Care Aide

Table 112. Facility 6: Pre-test raw scores data

FORM	JOB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
	TEST	1	1	3	1	1	6	1	1	1	1	1	1	1	1	1	22
1	RCA	1	0	-1	0	1	4	1	1	0	1	1	0	1	1	0	11
2	RCA	1	0	0	1	1	4	1	1	1	0	1	0	0	1	1	13
3	RCA	1	0	0	1	1	3	1	1	0	1	0	0	0	1	0	10
4	RCA	0	0	-3	0	0	0	1	-2	1	1	1	1	0	0	0	0

"TEST" = Number of points possible for each question and total test.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.

Table 113. Facility 6: Immediate post-presentation post-test raw scores data

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
	TEST	3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1	RCA	-1	1	0	1	1	1	0	3	0	0	1	1	0	1	0	9
2	RCA	0	0	1	1	1	1	1	2	1	1	0	1	0	1	1	12
3	RCA	-1	1	0	1	0	1	0	2	0	1	0	0	0	1	1	7
4	RCA	0	1	0	0	0	1	1	-1	1	1	0	1	0	0	0	5

"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 114. Facility 6: Immediate post-presentation evaluation raw scores data

#1	#2	#3	#4	#5	COMMENTS
1	4	5	5	5	
4	3	4	3	4	
4	3	4	3	4	
DID	NOT	FILL	OUT		

Evaluation questions corresponding with raw data scores:
Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

1.) This program was easy to understand.
STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

2.) This program increased my understanding of the topic.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

3.) I can use this information in my day-to-day work.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

4.) This information will help me care for the residents better.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

5.) I would recommend this program to be used in the future.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

D.4   EDUCATIONAL PROGRAM – DAY OF PRESENTATION

This section contains descriptive and comparative statistics of test performance on pre-test, post-test and immediate post-program evaluation (Likert scale) by facility.

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D.4.1 Facility 1, Day 1 and Day 2 presentations – descriptive and comparative statistics.

This subsection contains the results from Facility 1, both days of presentation.

Table 115. Facility 1: Pre-test versus post-test, simple score change and descriptive statistics, day 1, 7:00 AM

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
1	RCA	13	59.09	15	68.18	2	13.33
2	RCA	6	27.27	12	54.55	6	50.00
3	RCA	11	50.00	15	68.18	4	26.67
MEAN		10	45.45	14	63.64	4.00	30.00
SD		3.61	16.39	1.73	7.87	2.00	18.56
MEDIAN		11.00	47.73	15.00	68.18	4.00	26.67

Total possible points: 22.

PRE-TEST SCORES: Range 6-13; mean score 10; SD 3.61; median 11 points.
PERCENT CORRECT ON PRE-TEST: Range 27.27%-59.09%; mean 45.45%; SD 16.39; median 47.73%.
POST-TEST SCORES: Range 12-15; mean 14; SD 1.73; median 15.00.
PERCENT CORRECT ON POST-TEST: Range 54.55-68.18%; mean 63.64%; SD 7.87; median 68.18%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range 2-6 points; mean 4 points; SD 2; median 4.

Table 116. Facility 1: Immediate post-presentation evaluations, descriptive statistics, day 1, 7:00 AM

	#1	#2	#3	#4	#5	MEAN	SD	MEDIAN
	5	5	5	5	5	5	0	5
	5	5	5	5	5	5	0	5
	5	4	4	4	4	4.2	0.45	4
MEAN	5	4.67	4.67	4.67	4.67			
SD	0	0.58	0.58	0.58	0.58			
MEDIAN	5	5	5	5	5			

1.) This program was easy to understand. ***Range:4-5; mean: 4.67; SD:0.58; median: 5.***
2.) This program increased my understanding of the topic. ***Range:4-5; mean: 4.67; SD:0.58; median: 5.***
3.) I can use this information in my day-to-day work. ***Range:4-5; mean: 4.67; SD:0.58; median: 5.***
4.) This information will help me care for the residents better. ***Range:4-5; mean: 4.67; SD:0.58; median: 5.***
5.) I would recommend this program to be used in the future. ***Range:4-5; mean: 4.67; SD:0.58; median: 5.***

RESPONDENT 1 & 2: Range: 5; mean: 5; SD: 0; median: 5.
RESPONDENT 3: Range: 4-5; mean: 4.2; SD: 0.45; median: 4.
TOTAL PROGRAM: Range: 4-5; mean: 4.15; SD: 1.57; median: 5.

Table 117. Facility 1: Pre-test vs. Post-test, simple score change and descriptive statistics, day 2, 2:45 PM

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
1	HOUSE	12	54.55	16	72.73	4	18.18
2	HOUSE	4	18.18	10	45.45	6	27.27
3	HOUSE	9	40.91	15	68.18	6	27.27
4	HOUSE	3	13.64	9	40.91	6	27.27
5	HOUSE	5	22.73	11	50.00	6	27.27
6	LPN	8	36.36	17	77.27	9	40.91
7	LPN	9	40.91	13	59.09	4	18.18
8	LPN	9	40.91	13	59.09	4	18.18
9	RCA	10	45.45	13	59.09	3	13.64
10	RCA	12	54.55	14	63.64	2	9.09
11	RCA	11	50.00	17	77.27	6	27.27
12	RCA	10	45.45	16	72.73	6	27.27
14		9	40.91	7	31.82	-2	-9.09
28	RCA	8	36.36	14	63.64	6	27.27
MEAN		8.50	38.64	13.21	60.06	4.71	21.43
SD		2.77	12.58	3.04	13.83	2.58	11.75
MEDIAN		9.00	40.91	13.50	61.36	6.00	27.27

Total possible points: 22.

PRE-TEST SCORES: Range 3-12 points; mean score 8.50; SD 2.77; median 9 points.
PERCENT CORRECT ON PRE-TEST: Range 13.64-54.55%;mean 38.64%; SD 12.58; median 40.91% .
POST-TEST SCORES: Range 7-17 points; mean 13.21; SD 3.04; median 13.50 points.
PERCENT CORRECT ON POST-TEST: Range 31.82-77.27%; mean 60.06%; SD 13.83; median 61.36%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -2-9 points; mean 4.71 points; SD 2.58; median 6 points.
PERCENT CHANGE: Range -9.09-40.91%; mean 21.43%; SD 11.75; median 27.27 points**.**

MISSING DATA:
Participant #13 began pre-test, left before completing to catch bus, no pre-test.

4 LPNs filled out Demographic form, 3completed tests; 6 housekeepers filled out forms, 5 completed tests. One test (participant #14) did not fill out job on test form – uncertain if LPN or housekeeper.

Table 118. Facility 1: Immediate post-presentation evaluation, descriptive statistics, day 2, 2:45 PM

	#1	#2	#3	#4	#5	MEAN	SD	MEDIAN
	5	5	5	5	5	5	0	5
	5	5	5	5	5	5	0	5
	5	5	5	5	5	5	0	5
	5	5	5	5	5	5	0	5
	5	5	5	5	5	5	0	5
	5	5	5	5	5	5	0	5
	5	5	5	5	5	5	0	5
	4	5	5	5	5	4.80	0.45	5.00
	4	4	5	4	5	4.40	0.55	4.00
	4	5	4	4	4	4.20	0.45	4.00
	0	1	0	0	0	0.20	0.45	0.00
MEAN	4.27	4.55	4.45	4.36	4.45			
SD	1.49	1.21	1.51	1.50	1.51			
MEDIAN	5.00	5.00	5.00	5.00	5.00			

1.) This program was easy to understand. *Range: 0-5; mean: 4.27; SD: 1.49; median: 5.*
2.) This program increased my understanding of the topic. *Range: 1-5; mean: 4.55; SD: 1.21; median: 5.*
3.) I can use this information in my day-to-day work. *Range: 0-5; mean: 4.45; SD: 1.51; median: 5.*
4.) This information will help me care for the residents better. *Range: 0-5; mean: 4.36; SD: 1.50; median: 5.*
5.) I would recommend this program to be used in the future. *Range: 0-5; mean: 4.45; SD: 1.51; median: 5.*

RESPONDENTS 1 through 7: Range: 5; mean: 5; SD: 0; median: 5.
RESPONDENT 8: Range: 4-5; mean: 4.8; SD: 0.45; median: 5.
RESPONDENT 9: Range 4-5; mean: 4.40; SD: 0.55; median 4.
RESPONDENT 10: Range 4-5; mean: 4.2; SD: 0.45; median 4.
RESPONDENT 11: Range 0-1; mean: 0.2; SD: 0.45; median 0.

TOTAL PROGRAM: Range: 0-5; mean: 4.42; SD: 1.4; median: 5.

D.4.2 Facility 2 – Day of presentation results, descriptive and comparative statistics

This subsection contains the results and data analysis from Facility 2 on the day of presentation.

Table 119. Facility 2: Pre-test vs. Post-test, simple score change and descriptive statistics

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
2	RCA	13	59.09	14	63.64	1	4.55
3	OFFICE	9	40.91	12	54.55	3	13.64
4		7	31.82	14	63.64	7	31.82
5	RCA	11	50.00	12	54.55	1	4.55
7	ACTIV	11	50.00	11	50.00	0	0.00
11		14	63.64	12	54.55	-2	-9.09
12	HOUSE	13	59.09	11	50.00	-2	-9.09
13	HOUSE	7	31.82	13	59.09	6	27.27
19	RCA	14	63.64	11	50.00	-3	-13.64
MEAN		11.00	50.00	12.22	55.56	1.22	5.56
SD		2.78	12.65	1.20	5.46	3.53	16.03
MEDIAN		11.00	50.00	12.00	54.55	1.00	4.55

Total possible points: 22.

PRE-TEST SCORES: Range 7-14 points; mean score 11; SD 2.78; median 11 points.
PERCENT CORRECT ON PRE-TEST: Range 31.82-63.64%;mean 50%; SD 12.65; median 50% .
POST-TEST SCORES: Range 11-14 points; mean 12.22; SD 1.20; median 12 points.
PERCENT CORRECT ON POST-TEST: Range 50-63.64%; mean 55.56%; SD 5.46; median 54.55%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -3-7 points; mean 1.22 points; SD 3.53; median 1 points.
PERCENT CHANGE: Range -13.64-31.82%; mean 5.56%; SD 16.03; median 4.55%.

MISSING DATA POINTS, ANSWERED PRE-TEST BUT NOT POST-TEST:
- Kitchen/Dietary – 7 participants
- Administrative Assistant – 1 participant
- RCA – 1 participant
- Nursing (no specific position identified) – 2 participants
  - 1 completed 3 questions and stopped
- Unidentified – 3 participants

MISSING DATA POINTS, LISTED ON DEMOGRAPHIC FORM BUT NOT ON POST-TEST:
- DOES NOT INCLUDE 2 UNIDENTIFIED PARTICIPANTS ON PRE/POST-TESTS
- Kitchen/Dietary – 7 participants
- Administrative Assistant – 1 participant
- RCA – 3 participants
- LPNs – 2 participants

Table 120. Facility 2: Immediate post-program evaluation, descriptive statistics

	#1	#2	#3	#4	#5
	5	5	5	5	5
	5	5	5	5	5
	5	5	5	5	5
	5	5	5	5	5
	5	5	3	3	3
	4	4	4	4	3
	4	4	4	4	4
	4	3	3	3	3
	4	4	3	3	3
	5	4	3	3	3
	4	4	4	4	4
	4	4	4	4	3
	3	3	3	3	3
	4	5	5	4	4
	5	5	4	4	4
MEAN	4.40	4.33	4.00	3.93	3.80
SD	0.63	0.72	0.85	0.80	0.86
MEDIAN	4.00	4.00	4.00	4.00	4.00

1.) This program was easy to understand. *Range: 3-5; mean: 4.4; SD: 0.63; median: 4.*
2.) This program increased my understanding of the topic. *Range: 3-5; mean: 4.33; SD: 0.72; median: 4.*
3.) I can use this information in my day-to-day work. *Range: 3-5; mean: 4; SD: 0.85; median 4.*
4.) This information will help me care for the residents better. *Range: 3-5; mean: 3.93; SD: 0.8; median 4.*
5.) I would recommend this program to be used in the future. *Range: 3-5; mean: 3.8; SD: 0.86; median 4.*

RESPONDENTS 1-4: Range: 5; mean: 5; SD: 0; median: 5.
RESPONDENT 5: Range 3-5; mean: 3.8; SD: 1.1; median: 3.
RESPONDENTS 6, 12: Range 3-4; mean: 3.8; SD: 0.45; median: 4.
RESPONDENTS 7, 11: Range 4; mean: 4; SD: 0; median: 4.
RESPONDENT 8: Range: 3-4; mean: 3.2; SD: 0.45; median: 3.
RESPONDENT 9: Range: 3-4; mean: 3.4; SD: 0.55; median: 3.
RESPONDENT 10: Range: 3-5; mean: 3.6; SD: 0.89; median: 3.
RESPONDENT 13: Range: 3; mean: 3; SD: 0; median: 3.
RESPONDENTS 14, 15: 4-5; mean: 4.4; SD: 0.55; median: 4.

TOTAL PROGRAM: Range 3-5; mean: 4.09; SD: 0.79; mean 4.

D.4.3 Facility 3- Day of presentation results, descriptive and comparative statistics

This subsection contains the results and data analysis from Facility 3 on the day of presentation.

Table 121. Facility 3: Pre-test vs. Immediate Post-Test, descriptive statistics

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
1	RCA	12	54.55	20	90.91	8	36.36
2		9	40.91	13	59.09	4	18.18
3	ACT	9	40.91	19	86.36	10	45.45
5	LPN	9	40.91	18	81.82	9	40.91
6	OFFICE	12	54.55	16	72.73	4	18.18
7	RCA	7	31.82	14	63.64	7	31.82
8	DRIVER	13	59.09	15	68.18	2	9.09
9	MAINT	7	31.82	9	40.91	2	9.09
10	OFFICE	5	22.73	16	72.73	11	50.00
11	NRSG	14	63.64	18	81.82	4	18.18
12	NRSG	12	54.55	19	86.36	7	31.82
13	NRSG	13	59.09	16	72.73	3	13.64
15	NRSG	9	40.91	15	68.18	6	27.27
16	OFFICE	11	50.00	14	63.64	3	13.64
17	RCA	12	54.55	17	77.27	5	22.73
18	OFFICE	10	45.45	12	54.55	2	9.09
19	RCA	11	50.00	10	45.45	-1	-4.55
20	OFFICE	13	59.09	16	72.73	3	13.64
21	RCA	10	45.45	15	68.18	5	22.73
22		8	36.36	9	40.91	1	4.55
23		12	54.55	12	54.55	0	0.00
24	HOUSE	11	50.00	13	59.09	2	9.09
25	HOUSE	12	54.55	15	68.18	3	13.64
26		10	45.45	15	68.18	5	22.73
27	KITCHEN	9	40.91	13	59.09	4	18.18
29		10	45.45	16	72.73	6	27.27
MEAN		10.38	47.20	14.81	67.31	4.42	20.10
SD		2.17	9.88	2.91	13.24	2.97	13.49
MEDIAN		10.50	47.73	15.00	68.18	4.00	18.18

Total possible: 22 points.

PRE-TEST SCORES: Range 5-13 points; mean score 10.38; SD 2.17; median 10.5 points.
PERCENT CORRECT ON PRE-TEST: Range 22.73-63.64%;mean 47.20%; SD 9.88; median 47.73% .
POST-TEST SCORES: Range 9-20 points; mean 14.81; SD 2.91; median 15 points.
PERCENT CORRECT ON POST-TEST: Range 40.91-90.91%; mean 67.31%; SD 13.24; median 68.18%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -1-11 points; mean 4.42 points; SD 2.97; median 4 points.
PERCENT CHANGE: Range -4.55-50%; mean 20.1%; SD 13.49; median 18.18%.

MISSING DATA FROM FACILITY 3PRE-TEST/POST-TEST DATA:
- Nursing: 1 came late, therefore post-test complete; pre-test incomplete
- RCA: 1 came late, therefore post-test complete; pre-test incomplete
- Unidentified: 1 pre-test information, no post test information

Table 122. Facility 3: Immediate post-presentation evaluation, descriptive data

	#1	#2	#3	#4	#5	MEAN	SD	MEDIAN
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	5	5	5	5	5	5	0.00	5
	4	4	4	4	4	4	0.00	4
	4	4	4	4	4	4	0.00	4
	5	4	4	4	5	4.4	0.55	4
	5	5	3	5	5	4.6	0.89	5
	5	4	5	5	4	4.6	0.55	5
	5	4	5	5	5	4.8	0.45	5
	5	3	4	4	5	4.2	0.84	4
	5	4	1	3	4	3.4	1.52	4
	4	4	5	5	5	4.6	0.55	5
	5	4	5	5	5	4.8	0.45	5
MEAN	4.90	4.67	4.67	4.80	4.87			
SD	0.31	0.55	0.84	0.48	0.35			
MEDIAN	5.00	5.00	5.00	5.00	5.00			

1.) This program was easy to understand. ***Range: 4-5; mean: 4.9; SD: 0.31; median: 5.***

2.) This program increased my understanding of the topic. ***Range: 3-5; mean: 4.67; SD: 0.55; median 5.***

3.) I can use this information in my day-to-day work. ***Range: 1-5; mean: 4.67; SD: 0.84; median: 5.***

4.) This information will help me care for the residents better. ***Range: 3-5; mean: 4.8; SD: 0.48; median: 5.***

5.) I would recommend this program to be used in the future. ***Range: 4-5; mean: 4.87; SD: 0.35; median: 5.***

RESPONDENTS 1-20: Range: 5; mean: 5; SD: 0; median: 5.
RESPONDENTS 21, 22: Range: 4; mean: 4; SD: 0; median: 4.
RESPONDENT 23: Range: 4-5; mean: 4.4; SD: 0.55; median: 4.
RESPONDENT 24: Range: 3-5; mean: 4.6; SD: 0.89; median: 5.
RESPONDENTS 25, 29: Range: 4-5; mean: 4.6; SD: 0.55; median: 5.
RESPONDENTS 26, 30: Range: 4-5; mean: 4.8; SD: 0.45; median: 5.
RESPONDENT 27: Range 3-5; mean: 4.2; SD: 0.84; median: 4.
RESPONDENT 28: Range 1-5; mean: 3.4; SD: 1.52; median: 4.

TOTAL PROGRAM RATING: Range: 1-5; mean: 4.78; SD: 0.54; median: 5.

D.4.4 Facility 4 - Day of presentation results, descriptive and comparative statistics

This subsection contains the results and data analysis from Facility 4 on the day of presentation.

Table 123. Facility 4: Pre-test vs. Post-test, descriptive statistics

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
1	NRSG	15	68.18	18	81.82	3	13.64
2	RCA	12	54.55	15	68.18	3	13.64
3	RCA	12	54.55	19	86.36	7	31.82
4	RCA	8	36.36	7	31.82	-1	-4.55
5	RCA	15	68.18	16	72.73	1	4.55
6	RCA	17	77.27	17	77.27	0	0.00
7	ADMIN	9	40.91	15	68.18	6	27.27
8	NRSG	19	86.36	15	68.18	-4	-18.18
9		15	68.18	15	68.18	0	0.00
10	RCA	11	50.00	15	68.18	4	18.18
11	NRSG	11	50.00	16	72.73	5	22.73
MEAN		13.09	59.50	15.27	69.42	2.18	9.92
SD		3.39	15.41	3.07	13.95	3.31	15.05
MEDIAN		12.00	54.55	15.00	68.18	3.00	13.64

Total points possible: 22.

PRE-TEST SCORES: Range 8-19 points; mean score 13.09; SD 3.39; median 12 points.
PERCENT CORRECT ON PRE-TEST: Range 36.36-86.36%;mean 50.5%; SD 15.42; median 54.55% .
POST-TEST SCORES: Range 7-19 points; mean 15.27; SD 3.07; median 15 points.
PERCENT CORRECT ON POST-TEST: Range 31.82-81.82%; mean 69.42%; SD 13.95; median 68.18%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -4-7 points; mean 2.18 points; SD 3.31; median 3 points.
PERCENT CHANGE: Range -18.18-31.82%; mean 9.92%; SD 15.05; median 13.64%.

MISSING DATA POINTS FROM PRE-TEST VS. POST-TEST:
- RCA – 3, came late; have post-test data, but not pre-test data
- NRSG – 1, position unidentified; came late, therefore pre-test only partially completed, have post-test data

MISSING DATA POINTS COMPARED TO DEMOGRAPHIC INFORMATION:
- RCA – 3 missing from pre-test data (9 filled out demographic information, 3 available for pre-tests; 9 post-tests).
- LPN – Uncertain; 2 LPN on demographic information, uncertain which test may be theirs.
- Unidentified – 1 individual did not provide job information on demopgraphic form, however it is not possible to determine if the unidentified data point on tests is hers or someone else who appears to be "missing."

Table 124. Facility 4: Immediate post-presentation evaluation, descriptive statistics

	#1	#2	#3	#4	#5	MEAN	SD	MEDIAN
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	4	4	4	4	4	4.00	0.00	4.00
	5	4	4	4	4	4.20	0.45	4.00
	3	3	3	4	4	3.40	0.55	3.00
	5	4	5	5	5	4.80	0.45	5.00
MEAN	4.79	4.64	4.71	4.79	4.79			
SD	0.58	0.63	0.61	0.43	0.43			
MEDIAN	5.00	5.00	5.00	5.00	5.00			

1.) This program was easy to understand. *Range: 3-5; mean: 4.79; SD: 0.58; median 5.*
2.) This program increased my understanding of the topic. *Range: 3-5; mean: 4.64; SD: 0.63; median: 5.*
3.) I can use this information in my day-to-day work. *Range: 3-5; mean: 4.71; SD: 0.61; median: 5.*
4.) This information will help me care for the residents better. *Range: 4-5; mean: 4.79; SD: 0.43; median: 5.*
5.) I would recommend this program to be used in the future. *Range: 4-5; mean: 4.79; SD: 0.43; median: 5.*

RESPONDENTS 1-10: Range: 5; mean: 5; SD: 0; median: 5.
RESPONDENT 11: Range: 4; mean: 4; SD: 0; median: 4.
RESPONDENT 12: Range: 4-5; mean: 4.20; SD: 0.45; median: 4.
RESPODNENT 13: Range: 3-4; mean: 3.4; SD: 0.55; median: 3.
RESPONDENT 14: Range 4-5; mean: 4.8; SD: 0.45; median: 5.

TOTAL PROGRAM: Range: 3-5; mean: 4.74; SD: 0.53; median: 5.

D.4.5   Facility 5, Day 1 AM and PM presentations, and Day 2 AM and PM presentations --

day of presentation results, descriptive and comparative statistics

This subsection contains the results and data analysis from Facility 5 on the day of presentation.

Table 125. Facility 5: Pre-test vs. immediate post-test, day 1 AM presentation, descriptive statistics

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
1	RCA	11	50.00	15	68.18	4	18.18
2	RCA	13	59.09	13	59.09	0	0.00
3	RCA	17	77.27	19	86.36	2	9.09
4	RCA	15	68.18	14	63.64	-1	-4.55
5	RCA	10	45.45	13	59.09	3	13.64
6	RCA	13	59.09	16	72.73	3	13.64
7	RN	9	40.91	17	77.27	8	36.36
MEAN		12.57	57.14	15.29	69.48	2.71	12.34
SD		2.82	12.82	2.21	10.07	2.93	13.31
MEDIAN		13.00	59.09	15.00	68.18	3.00	13.64

Total points possible: 22.

PRE-TEST SCORES: Range 9-17 points; mean score 12.57; SD 2.82; median 13 points.
PERCENT CORRECT ON PRE-TEST: Range 40.91-77.27%;mean 57.14%; SD 12.82; median 59.09% .
POST-TEST SCORES: Range 13-19 points; mean 15.29; SD 2.21; median 15 points.
PERCENT CORRECT ON POST-TEST: Range 59.09-86.36%; mean 69.48%; SD 10.07; median 68.18%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -1-8 points; mean 2.71 points; SD 2.93; median 3 points.
PERCENT CHANGE: Range -4.55-36.36%; mean 12.34%; SD 13.31; median 13.64%.

MISSING DATA: None.

Table 126. Facility 5: Pre-test vs. immediate post-test, day 1, PM presentation, descriptive statistics

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
1		15	68.18	15	68.18	0	0.00
2		9	40.91	17	77.27	8	36.36
3	RCA	8	36.36	12	54.55	4	18.18
4	RCA	10	45.45	15	68.18	5	22.73
5	OFFICE	13	59.09	13	59.09	0	0.00
6		15	68.18	14	63.64	-1	-4.55
MEAN		11.67	53.03	14.33	65.15	2.67	12.12
SD		3.08	13.99	1.75	7.96	3.56	16.18
MEDIAN		11.50	52.27	14.50	65.91	2.00	9.09

Total possible points: 22.

PRE-TEST SCORES: Range 9-15 points; mean score 11.67; SD 3.08; median 11.5 points.
PERCENT CORRECT ON PRE-TEST: Range 36.36 -68.18%;mean 53.03%; SD 13.99; median 52.27% .
POST-TEST SCORES: Range 13-17 points; mean 14.33; SD 1.75; median 14.5 points.
PERCENT CORRECT ON POST-TEST: Range 54.55-77.27%; mean 65.15%; SD 7.96; median 65.91%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -1-8 points; mean 2.67 points; SD 3.56; median 2 points.
PERCENT CHANGE: Range -4.55-36.36%; mean 12.12%; SD 16.18; median 9.09%.

MISSING DATA: None missing, however unable to determine 3 of the participants' jobs – 2 RNs and 1 RCA.

Table 127. Facility 5: Pre-test vs post-test descriptive statistics, day 2, AM

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
1	RCA	11	50.00	14	63.64	3	13.64
2	RCA	9	40.91	13	59.09	6	27.27
3	RCA	9	40.91	18	81.82	9	40.91
4	RCA	5	22.73	10	45.45	5	22.73
5	RN	16	72.73	18	81.82	2	9.09
6	RCA	8	36.36	14	63.64	6	27.27
MEAN		9.67	43.94	14.50	65.91	5.17	23.48
SD		3.67	16.68	3.08	14.01	2.48	11.29
MEDIAN		9.00	40.91	14.00	63.64	5.50	25.00

Total possible points: 22.

PRE-TEST SCORES: Range 8-16 points; mean score 9.67; SD 3.67; median 9 points.
PERCENT CORRECT ON PRE-TEST: Range 22.73-72.73%; mean 43.94%; SD 16.68; median 40.91% .
POST-TEST SCORES: Range 10-18 points; mean 14.50; SD 3.08; median 14 points.
PERCENT CORRECT ON POST-TEST: Range 45.45-81.82%; mean 65.91%; SD 14.01; median 63.64%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points 2-9 points; mean 5.17 points; SD 2.48; median 5.5 points.
PERCENT CHANGE: Range 9.09-40.91%; mean 23.48%; SD 11.29; median 25%.

MISSING DATA POINTS: None.

Table 128. Facility 5: Pre-test vs. immediate post-test descriptive data, day 2, PM

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
1	RCA	12	54.55	17	77.27	5	22.73
2	RCA	7	31.82	14	63.64	7	31.82
3		15	68.18	17	77.27	2	9.09
4		11	50.00	11	50.00	0	0.00
6	RCA	9	40.91	13	59.09	4	18.18
7	RCA	12	54.55	18	81.82	6	27.27
8		13	59.09	18	81.82	5	22.73
9	RCA	11	50.00	17	77.27	6	27.27
10		9	40.91	14	63.64	5	22.73
11	RCA	14	63.64	15	68.18	1	4.55
12	RCA	10	45.45	15	68.18	5	22.73
MEAN		11.18	50.83	15.36	69.83	4.18	19.01
SD		2.36	10.72	2.25	10.22	2.23	10.13
MEDIAN		11.00	50.00	15.00	68.18	5.00	22.73

Total possible points: 22.

PRE-TEST SCORES: Range 7-15 points; mean score 11.18; SD 2.36; median 11 points.
PERCENT CORRECT ON PRE-TEST: Range 31.82-68.18%; mean 50.83%; SD 10.72; median 50% .
POST-TEST SCORES: Range 11-18 points; mean 15.36; SD 2.25; median 15 points.
PERCENT CORRECT ON POST-TEST: Range 50-81.82%; mean 69.83%; SD 10.22; median 68.18%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points 0-7 points; mean 4.18 points; SD 2.23; median 5 points.
PERCENT CHANGE: Range 0-31.82%; mean 19.01%; SD 10.13; median 22.73%.

MISSING DATA POINTS:
- RCA – 2 have post-tests, came in after pre-tests and part of presentation
- Unidentified – 1 left before finishing post-test
- Remaining unidentified are either RCAs or RNs

Table 129. Facility 5: Immediate post-presentation evaluation, day 1, AM

	#1	#2	#3	#4	#5	MEAN	SD	MEDIAN
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
MEAN	5.00	5.00	5.00	5.00	5.00			
SD	0.00	0.00	0.00	0.00	0.00			
MEDIAN	5.00	5.00	5.00	5.00	5.00			

1.) This program was easy to understand. *Range: 5; mean: 5; SD: 0; median 5.*
2.) This program increased my understanding of the topic. *Range: 5; mean: 5; SD: 5; median 5.*
3.) I can use this information in my day-to-day work. *Range: 5; mean: 5; SD: 5; median 5.*
4.) This information will help me care for the residents better. *Range: 5; mean: 5; SD: 5; median 5.*
5.) I would recommend this program to be used in the future. *Range: 5; mean: 5; SD: 5; median 5.*

RESPONDENTS 1-7: Range: 5; mean: 5; SD: 0; median: 5.

TOTAL PROGRAM EVALUATION: Range: 5; mean: 5; SD: 0; median: 5.

Table 130. Facility 5: Immediate post-presentation evaluation, day 1, PM

	#1	#2	#3	#4	#5	MEAN	SD	MEDIAN
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	4	5	4	4	4	4.20	0.45	4.00
	5	4	5	4	5	4.60	0.55	5.00
MEAN	4.83	4.83	4.83	4.67	4.83			
SD	0.41	0.41	0.41	0.52	0.41			
MEDIAN	5.00	5.00	5.00	5.00	5.00			

1.) This program was easy to understand. *Range: 4-5; mean: 4.83; SD: 0.41; mean: 5.*
2.) This program increased my understanding of the topic. *Range: 4-5; mean: 4.83; SD: 0.41; mean: 5.*
3.) I can use this information in my day-to-day work. *Range: 4-5; mean: 4.83; SD: 0.41; mean: 5.*
4.) This information will help me care for the residents better. *Range: 4-5; mean: 4.67; SD: 0.52; mean: 5.*
5.) I would recommend this program to be used in the future. *Range: 4-5; mean: 4.83; SD: 0.41; mean: 5.*

RESPONDENTS 1-4: Range: 5; mean: 5; SD: 0; median: 5.
RESPONDENT 5: Range: 4-5; mean: 4.2; SD: 0.45; median: 4.
RESPONDENT 6: Range 4-5; mean: 4.6; SD: 0.55; median: 5.

Table 131. Facility 5: Immediate post-presentation evaluation, day 2, AM

	#1	#2	#3	#4	#5	MEAN	SD	MEDIAN
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	4	4	4	5	5	4.40	0.55	4.00
MEAN	4.83	4.83	4.83	5.00	5.00			
SD	0.41	0.41	0.41	0.00	0.00			
MEDIAN	5.00	5.00	5.00	5.00	5.00			

1.) This program was easy to understand. *Range: 4-5; mean: 4.83; SD: 0.41; mean: 5.*
2.) This program increased my understanding of the topic. *Range: 4-5; mean: 4.83; SD: 0.41; mean: 5.*
3.) I can use this information in my day-to-day work. *Range: 4-5; mean: 4.83; SD: 0.41; mean: 5.*
4.) This information will help me care for the residents better. *Range: 5; mean: 5; SD: 0; mean: 5.*
5.) I would recommend this program to be used in the future. *Range: 5; mean: 5; SD: 0; mean: 5.*

RESPONDENTS 1-5: Range: 5; mean: 5; SD: 0; median: 5.
RESPONDENT 6: Range: 4-5; mean: 4.4; SD: 0.55; median: 4.

TOTAL PROGRAM EVALUATION: Range: 4-5; mean: 4.9; SD: 0.31; median: 5.

Table 132. Facility 5: Immediate post-presentation evaluation, day 2, PM

	#1	#2	#3	#4	#5	MEAN	SD	MEDIAN
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	5	5	5	5	5	5.00	0.00	5.00
	4	4	4	5	5	4.40	0.55	4.00
	4	4	4	4	4	4.00	0.00	4.00
	3	3	3	3	3	3.00	0.00	3.00
MEAN	4.56	4.56	4.56	4.67	4.67			
SD	0.73	0.73	0.73	0.71	0.71			
MEDIAN	5.00	5.00	5.00	5.00	5.00			

1.) This program was easy to understand. *Range: 3-5; mean: 4.56; SD: 0.73; median: 5.*
2.) This program increased my understanding of the topic. *Range: 3-5; mean: 4.56; SD: 0.73; median: 5.*
3.) I can use this information in my day-to-day work. *Range: 3-5; mean: 4.56; SD: 0.73; median: 5.*
4.) This information will help me care for the residents better. *Range: 3-5; mean: 4.67; SD: 0.71; median 5.*
5.) I would recommend this program to be used in the future. *Range: 3-5; mean: 4.67; SD: 0.71; median 5.*

RESPONDENTS 1-6: Range: 5; mean: 5; SD: 0; median: 5.
RESPONDENT 7: Range: 4-5; mean: 4.4; SD: 0.55; median:5.
REPSONDENT 8: Range: 4; mean: 4; SD: 0; median: 4.
RESPONDENT 9: Range: 3; mean: 3; SD: 3; median 3.

TOTAL PROGRAM EVALUATION: Range: 3-5; mean: 4.60; SD: 0.69; median: 5.

D.4.6 Facility 6 presentation -- day of presentation results, descriptive and comparative statistics

This subsection contains the results and data analysis from Facility 6 on the day of presentation.

Table 133. Facility 6: Pre-test vs. immediate post-test scores, descriptive statistics

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
1	RCA	11	50.00	9	40.91	-2	-9.09
2	RCA	13	59.09	12	54.55	-1	-4.55
3	RCA	10	45.45	7	31.82	-3	-13.64
4	RCA	0	0.00	5	22.73	5	22.73
MEAN		8.50	38.64	8.25	37.50	-0.25	-1.14
SD		5.80	26.37	2.99	13.57	3.59	16.34
MEDIAN		10.50	47.73	8.00	36.36	-1.50	-6.82

Total possible points: 22.

PRE-TEST SCORES: Range: 0-13 points; mean score: 8.5; SD 5.8; median: 10.5 points.
PERCENT CORRECT ON PRE-TEST: Range: 0-59.09%;mean: 38.64%; SD: 26.37; median: 47.73% .
POST-TEST SCORES: Range: 5-12 points; mean: 8.25; SD: 2.99; median: 8 points.
PERCENT CORRECT ON POST-TEST: Range: 22.73-54.55%; mean: 37.5%; SD: 13.57; median: 36.36%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range: -3-5 points; mean: -0.25 points; SD: 3.59; median: -1.5 points.
PERCENT CHANGE: Range -13.64-22.73%; mean: -1.14%; SD: 16.34; median -6.82%.

MISSING DATA POINTS: None.

Table 134. Facility 6: Immediate post-presentation evaluation

	#1	#2	#3	#4	#5	MEAN	SD	MEDIAN
	1	4	5	5	5	4.00	1.73	5.00
	4	3	4	3	4	3.60	0.55	4.00
	4	3	4	3	4	3.60	0.55	4.00
MEAN	3.00	3.33	4.33	3.67	4.33			
SD	1.73	0.58	0.58	1.15	0.58			
MEDIAN	4.00	3.00	4.00	3.00	4.00			

1.) This program was easy to understand. *Range: 1-4; mean: 3; SD: 1.73; median: 4.*
2.) This program increased my understanding of the topic. *Range: 3-4; mean: 3.33; SD: 0.58; median: 3.*
3.) I can use this information in my day-to-day work. *Range: 4-5; mean: 4.33; SD: 0.58; median: 4.*
4.) This information will help me care for the residents better. *Range: 3-5; mean: 3.67; SD: 1.15; median: 3.*
5.) I would recommend this program to be used in the future. *Range: 4-5; mean: 4.33; SD: 0.58; median: 4.*

RESPONDENT 1: Range: 1-5; mean: 4; SD: 1.73; median: 5.
RESPONDENTS 2, 3: Range: 3-4; mean: 3.6; SD: 0.55; median: 4.
RESPONDENT 4: Did not fill out.

TOTAL PROGRAM EVALUATION: Range: 1-5; mean: 3.73; SD: 1.03; median: 4.

D.5   EDUCATIONAL PROGRAM – DAY OF PRESENTATION

This section presents descriptive statistics of test performance on pre-test, post-test and immediate post-program evaluation (Likert scale) based on reported job/position across all facilities.

D.5.1 All participants across all facilities and positions -- day of presentation results, descriptive and comparative statistics

This subsection contains the results and descriptive data analysis from all positions across all facilities on the day of presentation.

Table 135. Descriptive statistics of all participants with completed pre-test and post-test scores, organized by job

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FACILITY
3	ACT	9	40.91	19	86.36	10	45.45	3
7	ACTIV	11	50.00	11	50.00	0	0.00	2
7	ADMIN	9	40.91	15	68.18	6	27.27	4
8	DRIVER	13	59.09	15	68.18	2	9.09	3
1	HOUSE	12	54.55	16	72.73	4	18.18	1
2	HOUSE	4	18.18	10	45.45	6	27.27	1
3	HOUSE	9	40.91	15	68.18	6	27.27	1
4	HOUSE	3	13.64	9	40.91	6	27.27	1
5	HOUSE	5	22.73	11	50.00	6	27.27	1
12	HOUSE	13	59.09	11	50.00	2	9.09	2
13	HOUSE	7	31.82	13	59.09	6	27.27	2
24	HOUSE	11	50.00	13	59.09	2	9.09	3
25	HOUSE	12	54.55	15	68.18	3	13.64	3
27	KITCHEN	9	40.91	13	59.09	4	18.18	3
6	LPN	8	36.36	17	77.27	9	40.91	1
7	LPN	9	40.91	13	59.09	4	18.18	1
8	LPN	9	40.91	13	59.09	4	18.18	1
5	LPN	9	40.91	18	81.82	9	40.91	3
9	MAINT	7	31.82	9	40.91	2	9.09	3
11	NRSG	14	63.64	18	81.82	4	18.18	3
12	NRSG	12	54.55	19	86.36	7	31.82	3
13	NRSG	13	59.09	16	72.73	3	13.64	3
15	NRSG	9	40.91	15	68.18	6	27.27	3
29	NRSG	10	45.45	16	72.73	6	27.27	3
1	NRSG	15	68.18	18	81.82	3	13.64	4
8	NRSG	19	86.36	15	68.18	-4	-18.18	4
11	NRSG	11	50.00	16	72.73	5	22.73	4
12	NRSG	14	63.64	18	81.82	4	18.18	4
4	NRSG	7	31.82	14	63.64	7	31.82	2
11	NRSG	14	63.64	12	54.55	-2	-9.09	2
3	OFFICE	9	40.91	12	54.55	3	13.64	2
6	OFFICE	12	54.55	16	72.73	4	18.18	3
10	OFFICE	5	22.73	16	72.73	11	50.00	3
16	OFFICE	11	50.00	14	63.64	3	13.64	3
18	OFFICE	10	45.45	12	54.55	2	9.09	3
20	OFFICE	13	59.09	16	72.73	3	13.64	3
5	OFFICE	13	59.09	13	59.09	0	0.00	5

Table 135. (continued)

1	RCA	13	59.09	15	68.18	2	9.09	1
2	RCA	6	27.27	12	54.55	6	27.27	1
3	RCA	11	50.00	15	68.18	4	18.18	1
9	RCA	10	45.45	13	59.09	3	13.64	1
10	RCA	12	54.55	14	63.64	2	9.09	1
11	RCA	11	50.00	17	77.27	6	27.27	1
12	RCA	10	45.45	16	72.73	6	27.27	1
28	RCA	8	36.36	14	63.64	6	27.27	1
2	RCA	13	59.09	14	63.64	1	4.55	2
5	RCA	11	50.00	12	54.55	1	4.55	2
19	RCA	14	63.64	11	50.00	-3	-13.64	2
1	RCA	12	54.55	20	90.91	8	36.36	3
7	RCA	7	31.82	14	63.64	7	31.82	3
17	RCA	12	54.55	17	77.27	5	22.73	3
19	RCA	11	50.00	10	45.45	-1	-4.55	3
21	RCA	10	45.45	15	68.18	5	22.73	3
2	RCA	12	54.55	15	68.18	3	13.64	4
3	RCA	12	54.55	19	86.36	6	27.27	4
4	RCA	8	36.36	7	31.82	-1	-4.55	4
5	RCA	15	68.18	16	72.73	1	4.55	4
6	RCA	17	77.27	17	77.27	0	0.00	4
10	RCA	11	50.00	15	68.18	4	18.18	4
1	RCA	11	50.00	15	68.18	4	18.18	5
2	RCA	13	59.09	13	59.09	0	0.00	5
3	RCA	17	77.27	19	86.36	2	9.09	5
4	RCA	15	68.18	14	63.64	-1	-4.55	5
5	RCA	10	45.45	13	59.09	3	13.64	5
6	RCA	13	59.09	16	72.73	3	13.64	5
3	RCA	8	36.36	12	54.55	4	18.18	5
4	RCA	10	45.45	14	63.64	4	18.18	5
1	RCA	11	50.00	13	59.09	2	9.09	5
2	RCA	9	40.91	18	81.82	9	40.91	5
3	RCA	9	40.91	10	45.45	1	4.55	5
4	RCA	5	22.73	14	63.64	9	40.91	5
6	RCA	8	36.36	17	77.27	9	40.91	5
1	RCA	12	54.55	14	63.64	2	9.09	5
2	RCA	7	31.82	13	59.09	6	27.27	5
6	RCA	9	40.91	18	81.82	9	40.91	5
7	RCA	12	54.55	17	77.27	5	22.73	5
9	RCA	11	50.00	15	68.18	4	18.18	5

Table 135. (continued)

11	RCA	14	63.64	15	68.18	1	4.55	5
12	RCA	10	45.45	9	40.91	-1	-4.55	6
1	RCA	11	50.00	12	54.55	1	4.55	6
2	RCA	13	59.09	7	31.82	-8	-36.36	6
3	RCA	10	45.45	5	22.73	-5	-22.73	6
4	RCA	0	0.00	15	68.18	15	68.18	5
7	RN	9	40.91	17	77.27	8	36.36	5
5	RN	16	72.73	18	81.82	2	9.09	5
14		9	40.91	7	31.82	-2	-9.09	1
2		9	40.91	13	59.09	4	18.18	3
22		8	36.36	9	40.91	1	4.55	3
23		12	54.55	12	54.55	0	0.00	3
26		10	45.45	15	68.18	5	22.73	3
9		15	68.18	15	68.18	0	0.00	4
1		15	68.18	15	68.18	0	0.00	5
2		9	40.91	17	77.27	8	36.36	5
6		15	68.18	14	63.64	-1	-4.55	5
3		15	68.18	17	77.27	2	9.09	5
4		11	50.00	11	50.00	0	0.00	5
8		13	59.09	18	81.82	5	22.73	5
10		9	40.91	14	63.64	5	22.73	5
MEAN		10.70	48.65	14.18	64.47	3.49	15.86	
SD		3.12	14.18	2.99	13.57	3.59	16.33	
MEDIAN		11.00	50.00	15.00	68.18	4.00	18.18	

Total possible points: 22.

PRE-TEST SCORES: Range 0-19 points; mean 10.7; SD 3.12; median 11 points.
PERCENT CORRECT ON PRE-TEST: Range 0-86.36%; mean 48.65%; SD 14.18; median 50% .
POST-TEST SCORES: Range 5-20 points; mean 14.18; SD 2.99; median 15 points.
PERCENT CORRECT ON POST-TEST: Range 22.73-90.91%; mean 64.47%; SD 13.57; median 68.18%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -8-15 points; mean 3.49; SD 3.59; median 4 points.
PERCENT CHANGE: Range -36.36-68.18%; mean 15.86%; SD 16.33; median 18.18%

Table 136. Comparison of pre-test and immediate post-test scores of all participants across all facilities utilizing Wilcoxon signed rank test, raw scores, using IBM SPSSv22®

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	98	0	19	10.70	3.120
POST-TEST	98	5	20	14.18	2.986
RAW CHANGE	98	-8	15	3.49	3.593
Valid N (listwise)	98				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST-TEST - PRE-TEST	Negative Ranks	12[a]	24.33	292.00
	Positive Ranks	78[b]	48.76	3803.00
	Ties	8[c]		
	Total	98		

a. POST-TEST < PRE-TEST

b. POST-TEST > PRE-TEST

c. POST-TEST = PRE-TEST

Test Statistics[a]

	POST-TEST - PRE-TEST
Z	-7.079[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

These results indicate that there is a statistically significant change in the post-test scores compared to the pre-test scores. With a Z-score of -7.079 and a significance level of 0.000, it is not likely that the change noted is due to chance.

Table 137. Immediate post-presentation evaluations, all facilities combined

	#1	#2	#3	#4	#5	COMMENTS	FACILITY
	5	5	5	5	5		1
	5	5	5	5	5		1
	5	4	4	4	4		1
	5	5	5	5	5		1
	5	5	5	5	5		1
	5	5	5	5	5		1
	5	5	5	5	5		1
	5	5	5	5	5		1
	5	5	5	5	5		1
	5	5	5	5	5		1
	4	5	5	5	5		1
	4	4	5	4	5		1
	4	5	4	4	4		1
	0	1	0	0	0		1
	5	5	5	5	5		2
	5	5	5	5	5		2
	5	5	5	5	5		2
	5	5	5	5	5		2
	5	5	3	3	3		2
	4	4	4	4	3		2
	4	4	4	4	4		2
	4	3	3	3	3		2
	4	4	3	3	3		2
	5	4	3	3	3		2
	4	4	4	4	4		2
	4	4	4	4	3		2
	3	3	3	3	3		2
	4	5	5	4	4		2
	5	5	4	4	4		2
	5	4	4	4	4		2
	4	4	4	4	4		2
	5	5	5	5	5	Great - thanks for coming	3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3

Table 137. (continued)

	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	5	5	5	5	5		3
	4	4	4	4	4		3
	4	4	4	4	4		3
	5	4	4	4	5		3
	5	5	5	5	5		3
	5	5	3	5	5		3
	5	4	5	5	4		3
	5	4	5	5	5		3
	5	3	4	4	5		3
	5	4	1	3	4		3
	4	4	5	5	5		3
	5	4	5	5	5		3
	5	5	5	5	5		4
	5	5	5	5	5		4
	3	3	3	3	3		4
	5	4	4	4	4		4
	4	4	4	3	4		4
	4	3	3	4	4		4
	5	5	4	5	4		4
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5

Table 137. (continued)

	5	5	5	5	5		5
	4	5	4	4	4		5
	5	4	5	4	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	4	4	4	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	5	5	5	5	5		5
	4	4	4	5	5		5
	4	4	4	4	4		5
	3	3	3	3	3		5
	1	4	5	5	5		6
	4	3	4	3	4		6
	4	3	4	3	4		6
MEAN	4.63	4.55	4.51	4.53	4.57		
SD	0.79	0.73	0.87	0.82	0.80		
MEDIAN	5.00	5.00	5.00	5.00	5.00		

1.) This program was easy to understand. ***Range: 0-5; mean: 4.63; SD: 0.79; median: 5.***
2.) This program increased my understanding of the topic. ***Range: 1-5; mean: 4.55; SD: 0.73; median: 5.***
3.) I can use this information in my day-to-day work. ***Range: 0-5; mean: 4.51; SD: 0.87; median: 5.***
4.) This information will help me care for the residents better. ***Range: 0-5; mean:4.53; SD: 0.82; median: 5.***
5.) I would recommend this program to be used in the future. ***Range: 0-5; mean: 4.57; SD: 0.8; median: 5.***

TOTAL PROGRAM EVALUATION: Range 0-5; mean: 4.55; SD: 0.8; median: 5.

D.5.2   Resident Care Aides across all facilities -- day of presentation results, descriptive and comparative statistics

This subsection contains the results and descriptive data analysis from all positions across all facilities on the day of presentation. This program has primarily been developed to be provided to resident care aides (RCAs) at ALFs/PCHs. A minimum of 46 across six facilities completed both the pre-test and the post-test administered immediately following the educational program. One facility, Facility 6, was unique in that virtually each of the four RCAs scored lower on the post-test than on the pre-test. Several issues arose during the program, as addressed in the discussion of this study. One significant issue is that the staff were running late to get dinner ready for the residents at the time the post-test was administered. Due to this unique situation, data were analyzed both with and without Facility 6.

Table 138. Comparison of pre-test and immediate post-test scores of RCAs across all facilities, descriptive statistics

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FACILITY
1	RCA	13	59.09	15	68.18	2	9.09	1
2	RCA	6	27.27	12	54.55	6	27.27	1
3	RCA	11	50.00	15	68.18	4	18.18	1
9	RCA	10	45.45	13	59.09	3	13.64	1
10	RCA	12	54.55	14	63.64	2	9.09	1
11	RCA	11	50.00	17	77.27	6	27.27	1
12	RCA	10	45.45	16	72.73	6	27.27	1
28	RCA	8	36.36	14	63.64	6	27.27	1
2	RCA	13	59.09	14	63.64	1	4.55	2
5	RCA	11	50.00	12	54.55	1	4.55	2
19	RCA	14	63.64	11	50.00	-3	-13.64	2
1	RCA	12	54.55	20	90.91	8	36.36	3
7	RCA	7	31.82	14	63.64	7	31.82	3
17	RCA	12	54.55	17	77.27	5	22.73	3
19	RCA	11	50.00	10	45.45	-1	-4.55	3
21	RCA	10	45.45	15	68.18	5	22.73	3
2	RCA	12	54.55	15	68.18	3	13.64	4
3	RCA	12	54.55	19	86.36	6	27.27	4
4	RCA	8	36.36	7	31.82	-1	-4.55	4
5	RCA	15	68.18	16	72.73	1	4.55	4
6	RCA	17	77.27	17	77.27	0	0.00	4
10	RCA	11	50.00	15	68.18	4	18.18	4
1	RCA	11	50.00	15	68.18	4	18.18	5
2	RCA	13	59.09	13	59.09	0	0.00	5
3	RCA	17	77.27	19	86.36	2	9.09	5
4	RCA	15	68.18	14	63.64	-1	-4.55	5
5	RCA	10	45.45	13	59.09	3	13.64	5
6	RCA	13	59.09	16	72.73	3	13.64	5
3	RCA	8	36.36	12	54.55	4	18.18	5
4	RCA	10	45.45	14	63.64	4	18.18	5
1	RCA	11	50.00	13	59.09	2	9.09	5
2	RCA	9	40.91	18	81.82	9	40.91	5
3	RCA	9	40.91	10	45.45	1	4.55	5
4	RCA	5	22.73	14	63.64	9	40.91	5
6	RCA	8	36.36	17	77.27	9	40.91	5
1	RCA	12	54.55	14	63.64	2	9.09	5
2	RCA	7	31.82	13	59.09	6	27.27	5
6	RCA	9	40.91	18	81.82	9	40.91	5

Table 138. (continued)

7	RCA	12	54.55	17	77.27	5	22.73	5
9	RCA	11	50.00	15	68.18	4	18.18	5
11	RCA	14	63.64	15	68.18	1	4.55	5
12	RCA	10	45.45	9	40.91	-1	-4.55	6
1	RCA	11	50.00	12	54.55	1	4.55	6
2	RCA	13	59.09	7	31.82	-8	-36.36	6
3	RCA	10	45.45	5	22.73	-5	-22.73	6
4	RCA	0	0.00	15	68.18	15	68.18	5
MEAN		10.74	48.81	14.04	63.83	3.24	14.72	
SD		3.04	13.80	3.16	14.37	4.03	18.31	
MEDIAN		11.00	50.00	14.00	63.64	3.00	13.64	

Total possible points: 22.

"FORMS" refers to the assigned number for participant at a given facility/presentation.
"FACILITY" refers to the assigned facility number.

PRE-TEST SCORES: Range 0-17 points; mean score 10.74; SD 3.04; median 11 points.
PERCENT CORRECT ON PRE-TEST: Range 0-77.27%;mean 48.81%; SD 13.8; median
     50% .
POST-TEST SCORES: Range 5-20 points; mean 14.04; SD 3.16; median 14 points.
PERCENT CORRECT ON POST-TEST: Range 22.73-90.91%; mean 63.83%; SD 14.37; median
     63.64%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -8-15 points; mean 3.24
     points; SD 4.03; median 3 points.
PERCENT CHANGE: Range -36.36-68.18%; mean 14.72%; SD 18.31; median 13.64%.

Table 139. Comparison of pre-test and immediate post-test scores of all RCAs across all facilities utilizing Wilcoxon signed rank test, raw scores, using IBM SPSSv22®

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	49	0	17	10.59	3.140
POST-TEST	49	3	20	13.82	3.434
RAW CHANGE	49	-8	15	3.25	3.903
Valid N (listwise)	49				

Ranks		N	Mean Rank	Sum of Ranks
POST-TEST - PRE-TEST	Negative Ranks	7[a]	16.21	113.50
	Positive Ranks	40[b]	25.36	1014.50
	Ties	2[c]		
	Total	49		
a. POST-TEST < PRE-TEST				
b. POST-TEST > PRE-TEST				
c. POST-TEST = PRE-TEST				

Test Statistics[a]	
	POST-TEST - PRE-TEST
Z	-4.778[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

These results indicate a statistically significant difference between pre-test scores and post-test scores among RCAs.
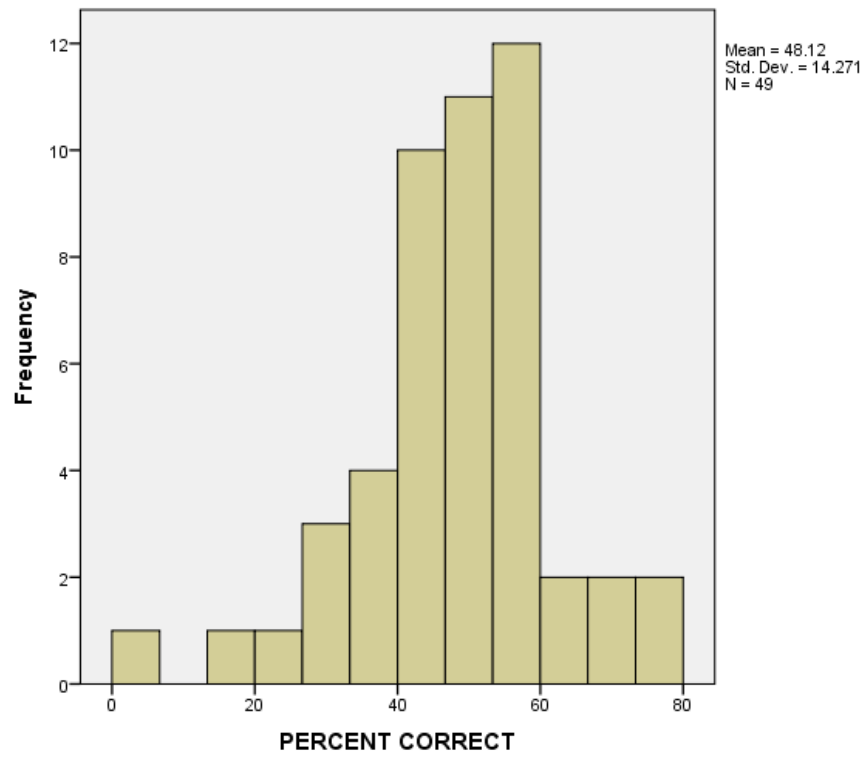
Figure 7. Histogram of pre-test scores of all RCAs across all facilities
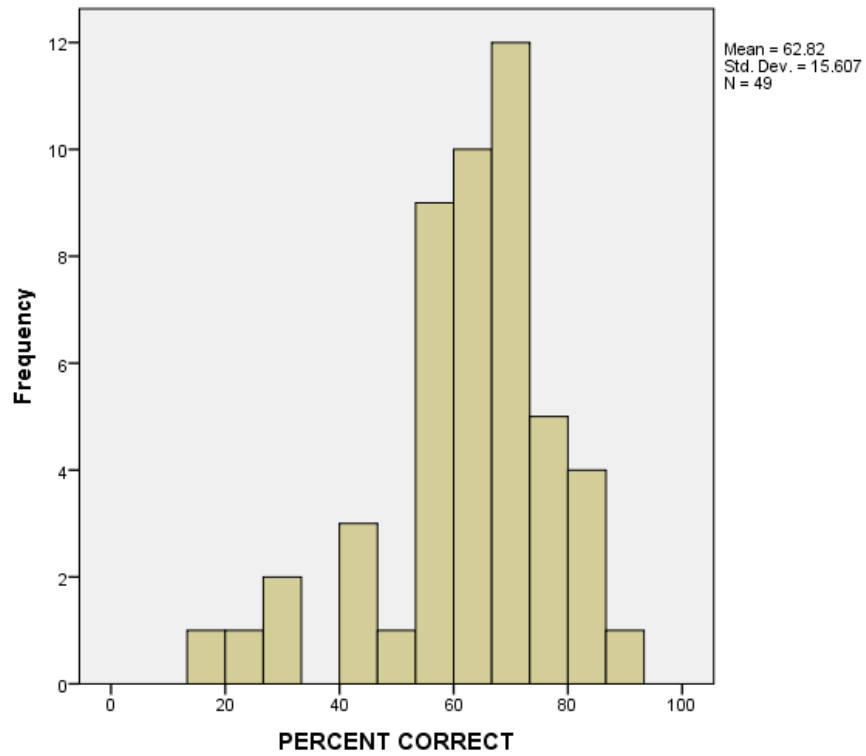
Figure 8. Histogram of immediate post-test scores of all RCAs across all faciilities

Table 140. Resident care aides across facilities with Facility 6 removed as an outlier

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FACILITY
1	RCA	13	59.09	15	68.18	2	9.09	1
2	RCA	6	27.27	12	54.55	6	27.27	1
3	RCA	11	50.00	15	68.18	4	18.18	1
9	RCA	10	45.45	13	59.09	3	13.64	1
10	RCA	12	54.55	14	63.64	2	9.09	1
11	RCA	11	50.00	17	77.27	6	27.27	1
12	RCA	10	45.45	16	72.73	6	27.27	1
28	RCA	8	36.36	14	63.64	6	27.27	1
2	RCA	13	59.09	14	63.64	1	4.55	2
5	RCA	11	50.00	12	54.55	1	4.55	2
19	RCA	14	63.64	11	50.00	-3	-13.64	2
1	RCA	12	54.55	20	90.91	8	36.36	3
7	RCA	7	31.82	14	63.64	7	31.82	3
17	RCA	12	54.55	17	77.27	5	22.73	3
19	RCA	11	50.00	10	45.45	-1	-4.55	3
21	RCA	10	45.45	15	68.18	5	22.73	3
2	RCA	12	54.55	15	68.18	3	13.64	4
3	RCA	12	54.55	19	86.36	6	27.27	4
4	RCA	8	36.36	7	31.82	-1	-4.55	4
5	RCA	15	68.18	16	72.73	1	4.55	4
6	RCA	17	77.27	17	77.27	0	0.00	4
10	RCA	11	50.00	15	68.18	4	18.18	4
1	RCA	11	50.00	15	68.18	4	18.18	5
2	RCA	13	59.09	13	59.09	0	0.00	5
3	RCA	17	77.27	19	86.36	2	9.09	5
4	RCA	15	68.18	14	63.64	-1	-4.55	5
5	RCA	10	45.45	13	59.09	3	13.64	5
6	RCA	13	59.09	16	72.73	3	13.64	5
3	RCA	8	36.36	12	54.55	4	18.18	5
4	RCA	10	45.45	14	63.64	4	18.18	5
1	RCA	11	50.00	13	59.09	2	9.09	5
2	RCA	9	40.91	18	81.82	9	40.91	5
3	RCA	9	40.91	10	45.45	1	4.55	5
4	RCA	5	22.73	14	63.64	9	40.91	5
6	RCA	8	36.36	17	77.27	9	40.91	5
1	RCA	12	54.55	14	63.64	2	9.09	5
2	RCA	7	31.82	13	59.09	6	27.27	5
6	RCA	9	40.91	18	81.82	9	40.91	5

Table 140. (continued)

7	RCA	12	54.55	17	77.27	5	22.73	5
9	RCA	11	50.00	15	68.18	4	18.18	5
11	RCA	14	63.64	15	68.18	1	4.55	5
4	RCA	0	0.00	15	68.18	15	68.18	5
MEAN		10.71	48.70	14.60	66.34	3.86	17.53	
SD		3.16	14.35	2.60	11.80	3.48	15.83	
MEDIAN		11.00	50.00	15.00	68.18	4.00	18.18	

Total possible points: 22.

"FORMS" refers to the assigned number for participant at a given facility/presentation.
"FACILITY" refers to the assigned facility number.

PRE-TEST SCORES: Range 0-17 points; mean score 10.71; SD 3.16; median 11 points.
PERCENT CORRECT ON PRE-TEST: Range 0-77.27%;mean 48.7%; SD 14.35; median
    50% .
POST-TEST SCORES: Range 7-20 points; mean 14.6; SD 2.6; median 15 points.
PERCENT CORRECT ON POST-TEST: Range 31.82-90.91%; mean 66.34%; SD 11.8; median
    68.18%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -3-15 points; mean 3.86
    points; SD 3.48; median 4 points.
PERCENT CHANGE: Range -13.64-68.18%; mean 17.53%; SD 15.83; median 18.18%.

Score change for RCAs post-test all facilities vs. post-test less facility 6.

Table 141. All facilities

	RAW SCORE	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
MEAN	14.04	63.83	3.24	14.72
SD	3.16	14.37	4.03	18.31
MEDIAN	14.00	63.64	3.00	13.64

Table 142. All facilities less facility 6

	RAW SCORE	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE
MEAN	14.60	66.34	3.86	17.53
SD	2.60	11.80	3.48	15.83
MEDIAN	15.00	68.18	4.00	18.18

Improvement noted in scores once outlier removed.

Table 143. RCAs pre-test vs. immediate post-test comparative statistics using WSRT, Facility 6 data removed, analyzed by IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	42	0	17	10.71	3.157
POST-TEST	42	7	20	14.60	2.595
Valid N (listwise)	42				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST-TEST - PRE-TEST	Negative Ranks	4[a]	7.38	29.50
	Positive Ranks	36[b]	21.96	790.50
	Ties	2[c]		
	Total	42		

a. POST-TEST < PRE-TEST

b. POST-TEST > PRE-TEST

c. POST-TEST = PRE-TEST

Test Statistics[a]

	POST-TEST - PRE-TEST
Z	-5.126[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Z-score of -5.126 and significance value of .000 indicates change in scores not likely due to chance (the change in scores is statistically significant), but most likely due to educational program.
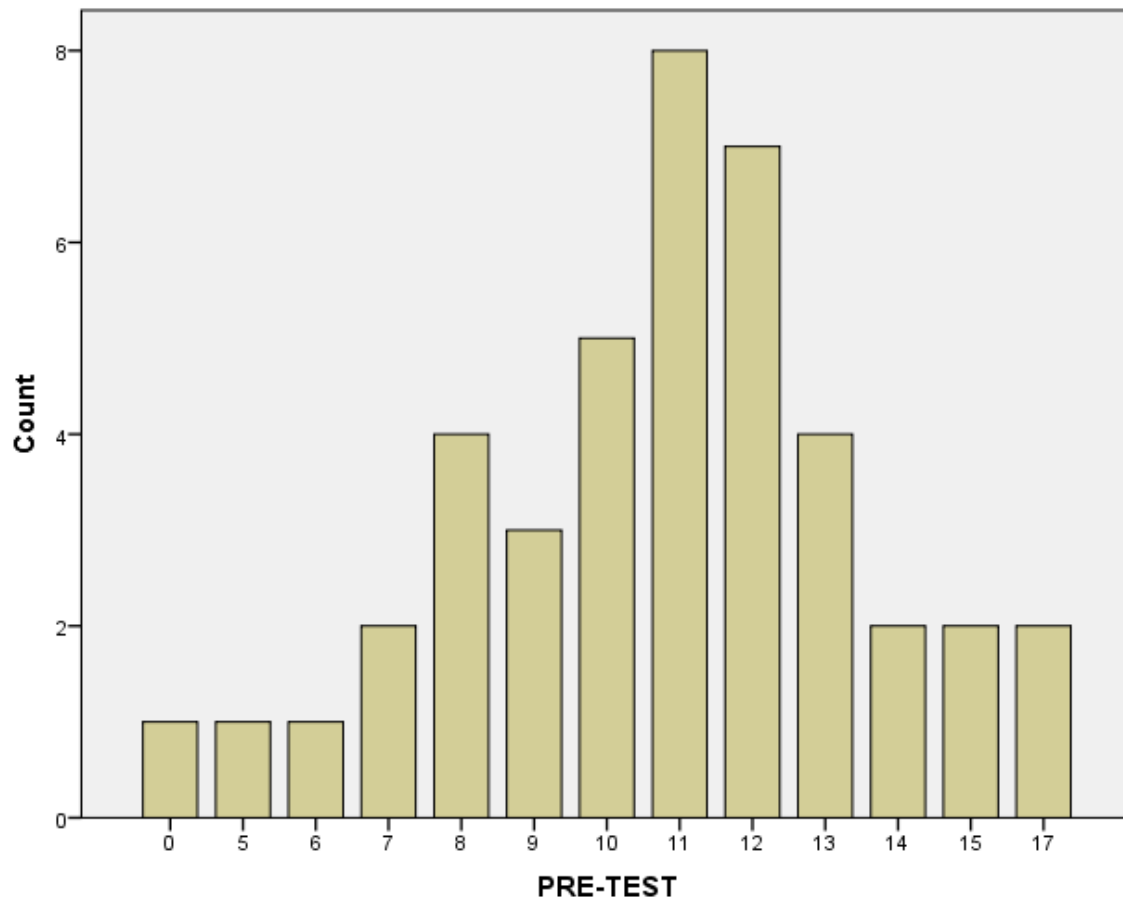
Figure 9. Histogram of pre-test scores, all RCAs across all facilities, with Facility 6 data removed
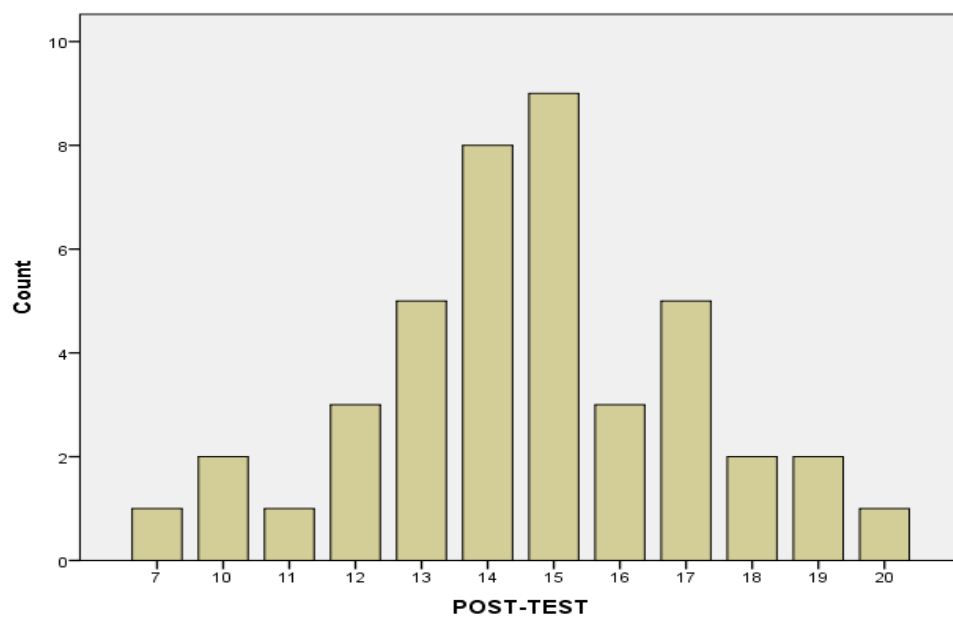
Figure 10. Histogram of immediate post-test scores, all RCAs, across all facilities with Facility 6 removed

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D.5.3   Registered nurses and licensed practical nurses all facilities; non-descript "Nursing" also analyzed – descriptive and comparative statistical analyses

When facilities were approached to participant in this study, they were asked to exclude licensed practitioners, as the information to be presented was greater in breadth than depth, and likely too basic for the licensed nurses. Had this presentation been developed for licensed nurses, some areas, such as medications, would have included more specifics, while other issues, such as clothing, would likely have been diminished, if not excluded altogether. Data were analyzed to see if, as suspected, the pre-test scores would be increased, and thus there would be less difference between the pre-test and the post-test scores. Those who specifically identified as LPNs and RNs were analyzed. Furthermore, a number of individuals identified themselves only as "nursing," and this group contained both RCAs and RN/LPNs, but unsure how many of each.

Table 144. RNs and LPNs pre-test vs. immediate post-test performance, all facilities

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FACILITY
6	LPN	8	36.36	17	77.27	9	40.91	1
7	LPN	9	40.91	13	59.09	4	18.18	1
8	LPN	9	40.91	13	59.09	4	18.18	1
5	LPN	9	40.91	18	81.82	9	40.91	3
7	RN	9	40.91	17	77.27	8	36.36	5
5	RN	16	72.73	18	81.82	2	9.09	5
MEAN		10.00	45.45	16.00	72.73	6.00	27.27	
SD		2.97	13.48	2.37	10.76	3.03	13.79	
MEDIAN		9.00	40.91	17.00	77.27	6.00	27.27	

Total possible points: 22.

"FORMS" refers to the assigned number for participant at a given facility/presentation.
"FACILITY" refers to the assigned facility number.

PRE-TEST SCORES: Range 8-16 points; mean score 10; SD 2.97; median 9 points.
PERCENT CORRECT ON PRE-TEST: Range 36.36-72.73%; mean 45.45%; SD 13.48; median 40.91% .
POST-TEST SCORES: Range 13-18 points; mean 16; SD 2.37; median 17 points.
PERCENT CORRECT ON POST-TEST: Range 59.06-81.82%; mean 72.73%; SD 10.76; median 77.27%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points 2-9 points; mean 6 points; SD 3.03; median 6 points.
PERCENT CHANGE: Range 9.09-40.91%; mean 27.27%; SD 13.79; median 27.27%.

Table 145. RNs and LPNs all facilities pre-test vs. post-test, analyzed by IMB SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	6	8	16	10.00	2.966
POST-TEST	6	13	18	16.00	2.366
Valid N (listwise)	6				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST-TEST - PRE-TEST	Negative Ranks	0[a]	.00	.00
	Positive Ranks	6[b]	3.50	21.00
	Ties	0[c]		
	Total	6		

a. POST-TEST < PRE-TEST

b. POST-TEST > PRE-TEST

c. POST-TEST = PRE-TEST

Test Statistics[a]

	POST-TEST - PRE-TEST
Z	-2.214[b]
Asymp. Sig. (2-tailed)	.027

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

In the LPN/RN group, with a small *n* of 6, the change in scores from pre-test to post-test was determined to be statistically significant, with a *Z*-score of -2.214 and a significance value of .027.
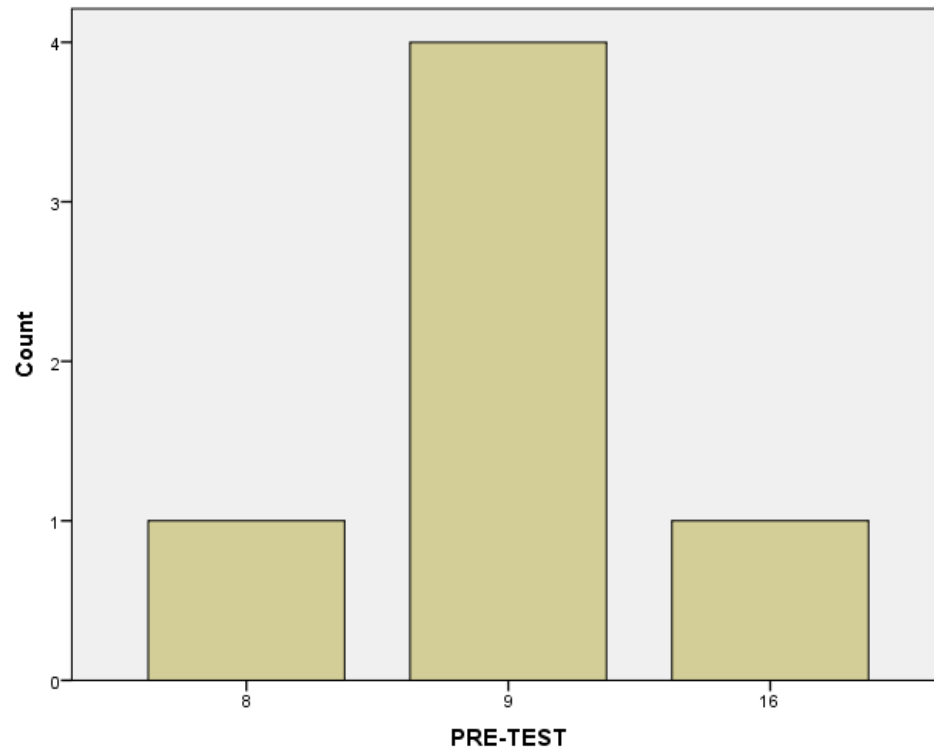
Figure 11. Histogram of all LPN/RN pre-test scores across all facilities
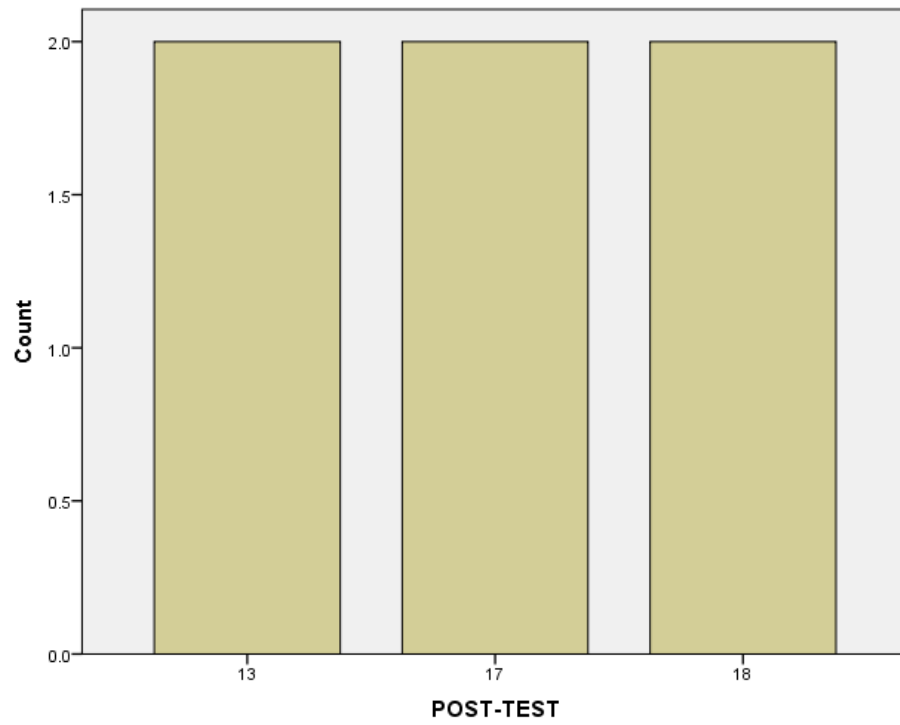
Figure 12. Histogram of immediate post-test scores of all LPNs/RNs across all facilities

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Table 146. Participants who identified themselves as "Nursing" only – based on comparisons with demographic information, may be RCA or RN/LPN, but unable to clearly identify which participant falls into which category, descriptive statistics of pre-test compared to immediate post-test scores

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FACILITY
11	NRSG	14	63.64	18	81.82	4	18.18	3
12	NRSG	12	54.55	19	86.36	7	31.82	3
13	NRSG	13	59.09	16	72.73	3	13.64	3
15	NRSG	9	40.91	15	68.18	6	27.27	3
29	NRSG	10	45.45	16	72.73	6	27.27	3
1	NRSG	15	68.18	18	81.82	3	13.64	4
8	NRSG	19	86.36	15	68.18	-4	-18.18	4
11	NRSG	11	50.00	16	72.73	5	22.73	4
12	NRSG	14	63.64	18	81.82	4	18.18	4
4	NRSG	7	31.82	14	63.64	7	31.82	2
11	NRSG	14	63.64	12	54.55	-2	-9.09	2
MEAN		12.55	57.02	16.09	73.14	3.55	16.12	
SD		3.27	14.85	2.07	9.42	3.56	16.18	
MEDIAN		13.00	59.09	16.00	72.73	4.00	18.18	

Total possible points: 22.

"FORMS" refers to the assigned number for participant at a given facility/presentation.
"FACILITY" refers to the assigned facility number.

PRE-TEST SCORES: Range 7-19 points; mean score 12.55; SD 3.27; median 13 points.
PERCENT CORRECT ON PRE-TEST: Range 31.82-86.36%; mean 57.02%; SD 14.85; median 59.09% .
POST-TEST SCORES: Range 12-19 points; mean 16.09; SD 2.07; median 16 points.
PERCENT CORRECT ON POST-TEST: Range 55.55-86.36%; mean 73.14%; SD 9.42; median 72.73%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -4-7 points; mean 3.55 points; SD 3.56; median 4 points.
PERCENT CHANGE: Range -18.18-31.82%; mean 16.12%; SD 16.18; median 18.18%.

Table 147. Participants who identified themselves as "nursing" only, made up of combination of nurses and RCA, comparative statistics utilizing WSRT as analyzed by IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	11	7	19	12.55	3.267
POST-TEST	11	12	19	16.09	2.071
Valid N (listwise)	11				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST-TEST - PRE-TEST	Negative Ranks	2[a]	3.00	6.00
	Positive Ranks	9[b]	6.67	60.00
	Ties	0[c]		
	Total	11		

a. POST-TEST < PRE-TEST

b. POST-TEST > PRE-TEST

c. POST-TEST = PRE-TEST

Test Statistics[a]

	POST-TEST - PRE-TEST
Z	-2.409[b]
Asymp. Sig. (2-tailed)	.016

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The mixed group of nursing with both professional and non-professional staff (LPN/RN and RCAs) demonstrated statistically significant improvement on the post-test compared to the pre-test, as evident by a Z-score of -2.409 and a 2-tailed significance level of 0.016.
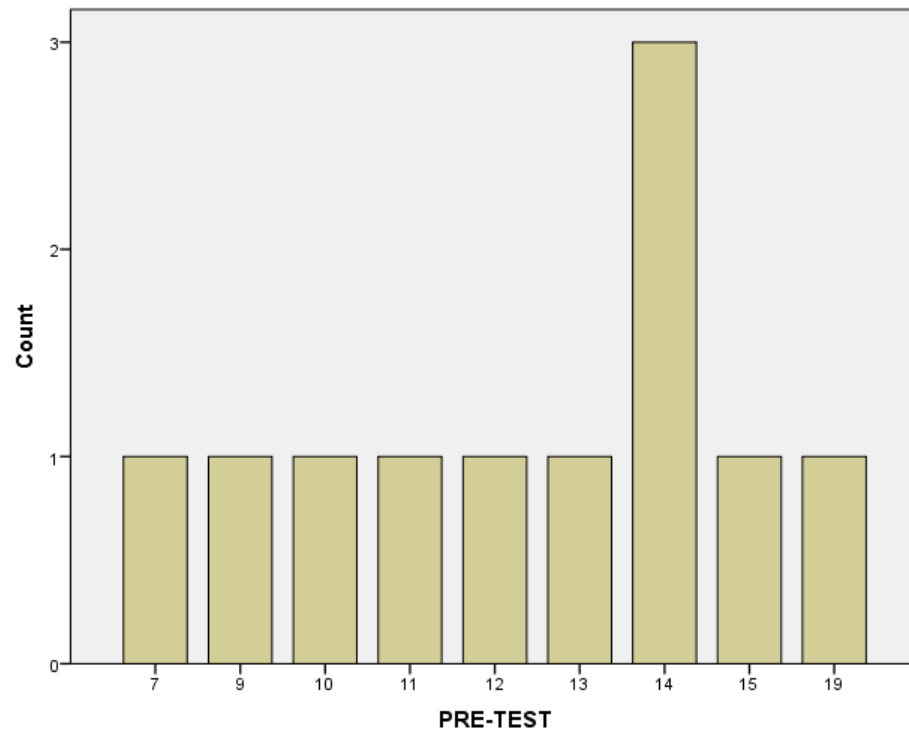
Figure 13. Histogram of pre-test scores of all "nursing" participants across all facilities, raw scores
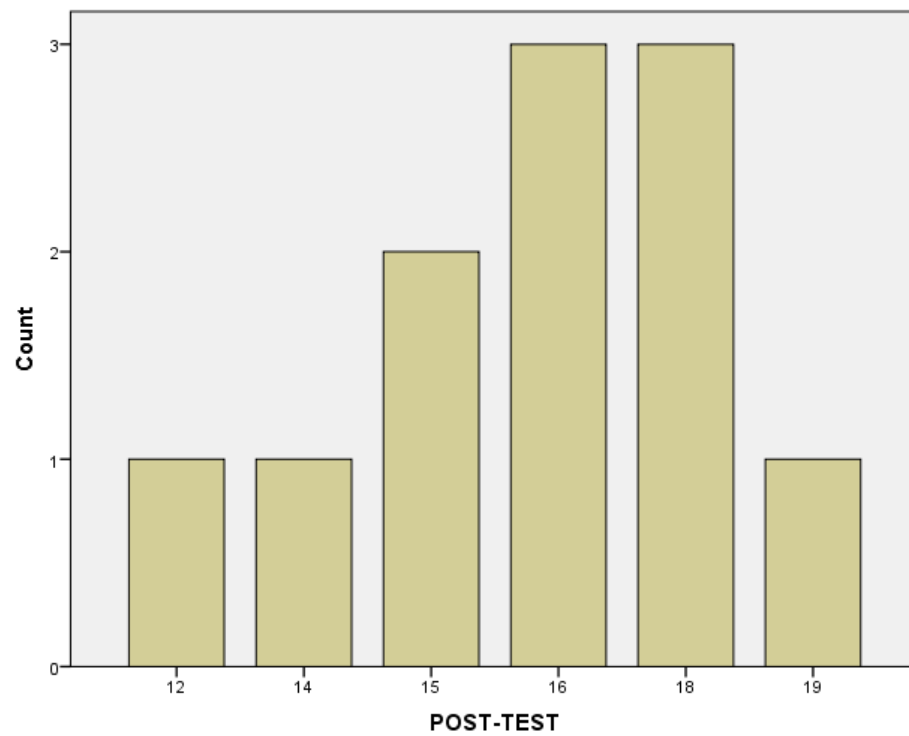
Figure 14. Histogram of immediate post-test scores of all "nursing" participants across all facilities

D.5.4 Other departments

Although this program was primarily developed for RCAs, it was considered that other non-professional staff may benefit from participating as well. Individuals on the housekeeping staff, activities staff and maintenance staff may be in positions to observe resident and/or environmental issues that contribute to falls; thus, raising the awareness of individuals in these departments may contribute to increased safety for residents. Anyone with access to the residents may be in a position to observe changes in behavior, or certain behaviors that contribute to increased fall risk, and all employees may watch for environmental hazards if made aware. Some facilities included all staff. Dining room servers and receptionists, similar to housekeepers, may be in a position to observe both environmental and resident issues, while kitchen and office staff, as well as drivers, may have less exposure to the residents and their living environment. Housekeepers may have the most access to residents and their environments, so their responses on the pre-test and post-test have been analyzed separately, as well as combined with the other groups. The n of each of the other groups individually is quite small, and the amount of exposure they have to the residents and their environment is similar, thus they have been analyzed together.

Table 148. Housekeeping staff across facilities, pre-test vs. immediate post-test performance, descriptive statistics

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FACILITY
1	HOUSE	12	54.55	16	72.73	4	18.18	1
2	HOUSE	4	18.18	10	45.45	6	27.27	1
3	HOUSE	9	40.91	15	68.18	6	27.27	1
4	HOUSE	3	13.64	9	40.91	6	27.27	1
5	HOUSE	5	22.73	11	50.00	6	27.27	1
12	HOUSE	13	59.09	11	50.00	2	9.09	2
13	HOUSE	7	31.82	13	59.09	6	27.27	2
24	HOUSE	11	50.00	13	59.09	2	9.09	3
25	HOUSE	12	54.55	15	68.18	3	13.64	3
MEAN		8.44	38.38	12.56	57.07	4.56	20.71	
SD		3.81	17.33	2.46	11.16	1.81	8.23	
MEDIAN		9.00	40.91	13.00	59.09	6.00	27.27	

Total possible points: 22.

"FORMS" refers to the assigned number for participant at a given facility/presentation.
"FACILITY" refers to the assigned facility number.

PRE-TEST SCORES: Range 3-13 points; mean score 8.44; SD 3.81; median 9 points.
PERCENT CORRECT ON PRE-TEST: Range 13.64-59.09%; mean 38.38%; SD 17.33; median 40.91% .
POST-TEST SCORES: Range 9-16 points; mean 12.56; SD 2.46; median 13 points.
PERCENT CORRECT ON POST-TEST: Range 40.91-72.73%; mean 57.07%; SD 11.16; median 59.09%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points 2-6 points; mean 4.56 points; SD 1.81; median 6 points.
PERCENT CHANGE: Range 9.09-27.27%; mean 20.71%; SD 8.23; median 27.27%.

Table 149. Housekeeping alone, pre-test vs. immediate post-test comparative statistics, as analyzed by IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	9	3	13	8.44	3.812
POST-TEST	9	9	16	12.56	2.455
Valid N (listwise)	9				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST-TEST - PRE-TEST	Negative Ranks	1[a]	1.50	1.50
	Positive Ranks	8[b]	5.44	43.50
	Ties	0[c]		
	Total	9		

a. POST-TEST < PRE-TEST

b. POST-TEST > PRE-TEST

c. POST-TEST = PRE-TEST

Test Statistics[a]

	POST-TEST - PRE-TEST
Z	-2.535[b]
Asymp. Sig. (2-tailed)	.011

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

When analyzed alone, with an n of 9, the group of "housekeeping" demonstrated a statistically significant improvement on the post-test compared to the pre-test, with a Z-score of -2.535 and a significance value of .011, lower than the established significance level of .05 to determine that an observed change is not likely due to chance.
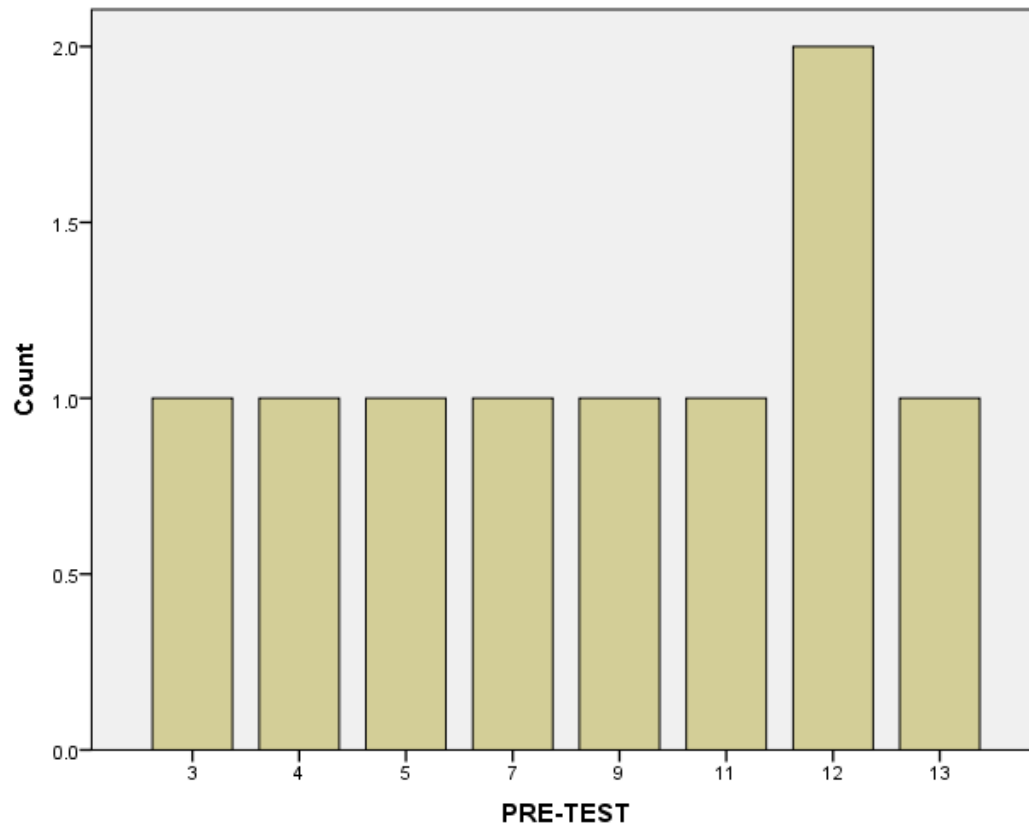
Figure 15. Histogram of housekeeping pre-test scores across all facilities
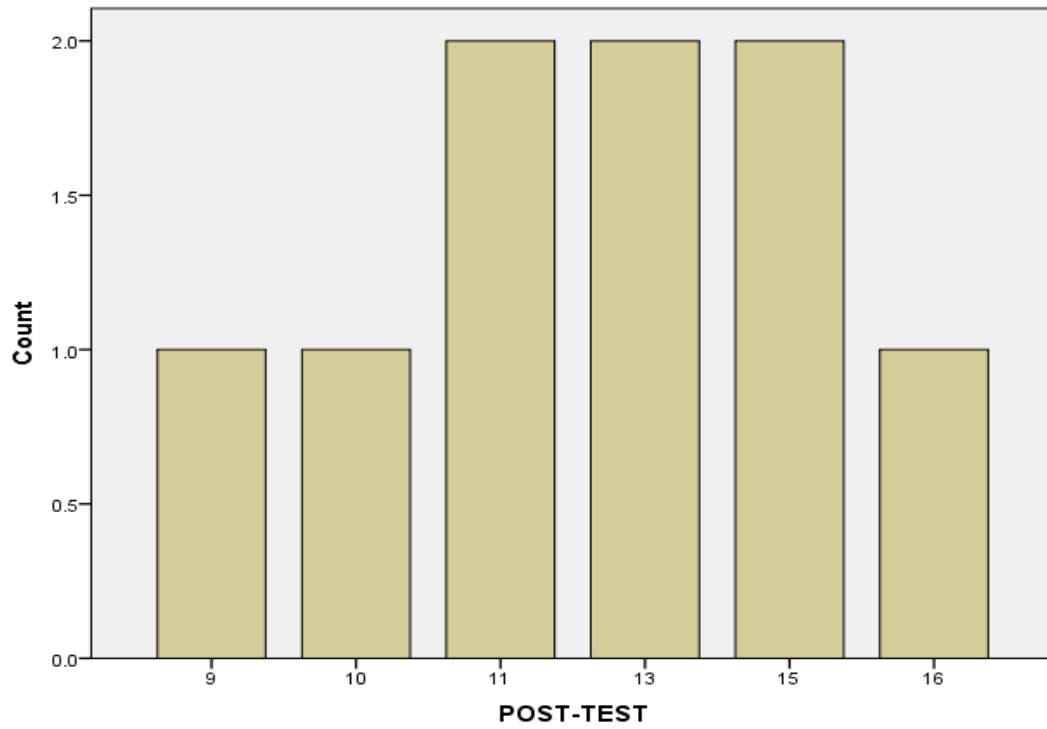
Figure 16. Histogram of housekeeping immediate post-test scores across all facilities

Table 150. Comparison of pre-test scores versus immediate post-test scores of combined non-caregiving staff across all facilities

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FACILITY
3	ACT	9	40.91	19	86.36	10	45.45	3
7	ACTIV	11	50.00	11	50.00	0	0.00	2
7	ADMIN	9	40.91	15	68.18	6	27.27	4
3	OFFICE	9	40.91	12	54.55	3	13.64	2
6	OFFICE	12	54.55	16	72.73	4	18.18	3
10	OFFICE	5	22.73	16	72.73	11	50.00	3
16	OFFICE	11	50.00	14	63.64	3	13.64	3
18	OFFICE	10	45.45	12	54.55	2	9.09	3
20	OFFICE	13	59.09	16	72.73	3	13.64	3
5	OFFICE	13	59.09	13	59.09	0	0.00	5
8	DRIVER	13	59.09	15	68.18	2	9.09	3
27	KITCHEN	9	40.91	13	59.09	4	18.18	3
9	MAINT	7	31.82	9	40.91	2	9.09	3
1	HOUSE	12	54.55	16	72.73	4	18.18	1
2	HOUSE	4	18.18	10	45.45	6	27.27	1
3	HOUSE	9	40.91	15	68.18	6	27.27	1
4	HOUSE	3	13.64	9	40.91	6	27.27	1
5	HOUSE	5	22.73	11	50.00	6	27.27	1
12	HOUSE	13	59.09	11	50.00	2	9.09	2
13	HOUSE	7	31.82	13	59.09	6	27.27	2
24	HOUSE	11	50.00	13	59.09	2	9.09	3
25	HOUSE	12	54.55	15	68.18	3	13.64	3
MEAN		9.41	42.77	13.36	60.74	4.14	18.80	
SD		3.10	14.07	2.59	11.78	2.80	12.73	
MEDIAN		9.50	43.18	13.00	59.09	3.50	15.91	

Total possible points: 22.

"FORMS" refers to the assigned number for participant at a given facility/presentation.
"FACILITY" refers to the assigned facility number.

PRE-TEST SCORES: Range 3-13 points; mean score 9.41; SD 3.10; median 9.5 points.
PERCENT CORRECT ON PRE-TEST: Range 13.64-59.09%; mean 42.77%; SD 14.07; median 43.18% .
POST-TEST SCORES: Range 9-19 points; mean 13.36; SD 2.59; median 13 points.
PERCENT CORRECT ON POST-TEST: Range 40.91-72.73%; mean 57.07%; SD 11.16; median 59.09%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points 2-6 points; mean 4.56 points; SD 1.81; median 6 points.
PERCENT CHANGE: Range 9.09-27.27%; mean 20.71%; SD 8.23; median 27.27%.

Table 151. Comparative statistics of pre-test vs. immediate post-test scores of combined non-caregiving staff across all facilities as analyzed by IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	22	3	13	9.41	3.096
POST-TEST	22	9	19	13.36	2.592
Valid N (listwise)	22				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST-TEST - PRE-TEST	Negative Ranks	1[a]	3.00	3.00
	Positive Ranks	19[b]	10.89	207.00
	Ties	2[c]		
	Total	22		

a. POST-TEST < PRE-TEST

b. POST-TEST > PRE-TEST

c. POST-TEST = PRE-TEST

Test Statistics[a]

	POST-TEST - PRE-TEST
Z	-3.831[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

This group, made up of individuals from various departments, most with little to no resident interaction, demonstrated significant improvement on their post-test scores compared to their pre-test scores. A Z-sore of -3.831 and a significance level of .000 indicates that their score changes were not due to chance, but most likely due to the intervention of the educational program.
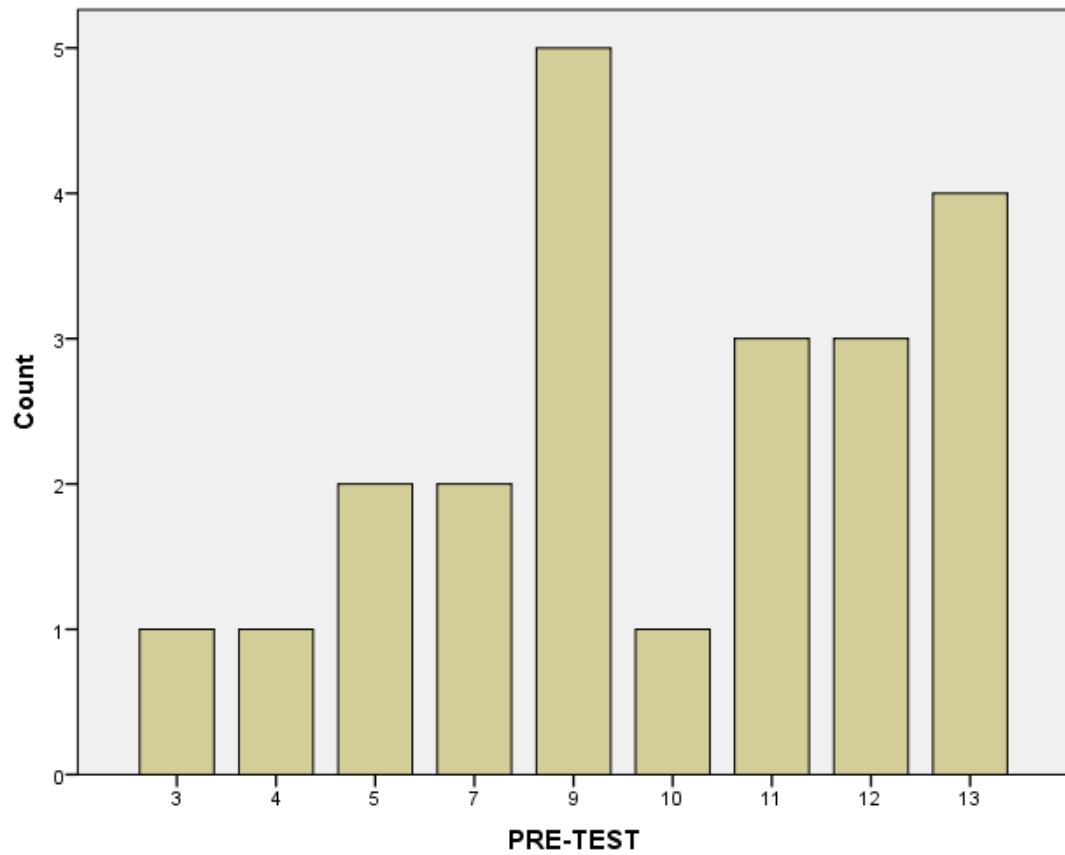
Figure 17. Histogram representing the pre-test scores of all non-caregiving staff combined across facilities
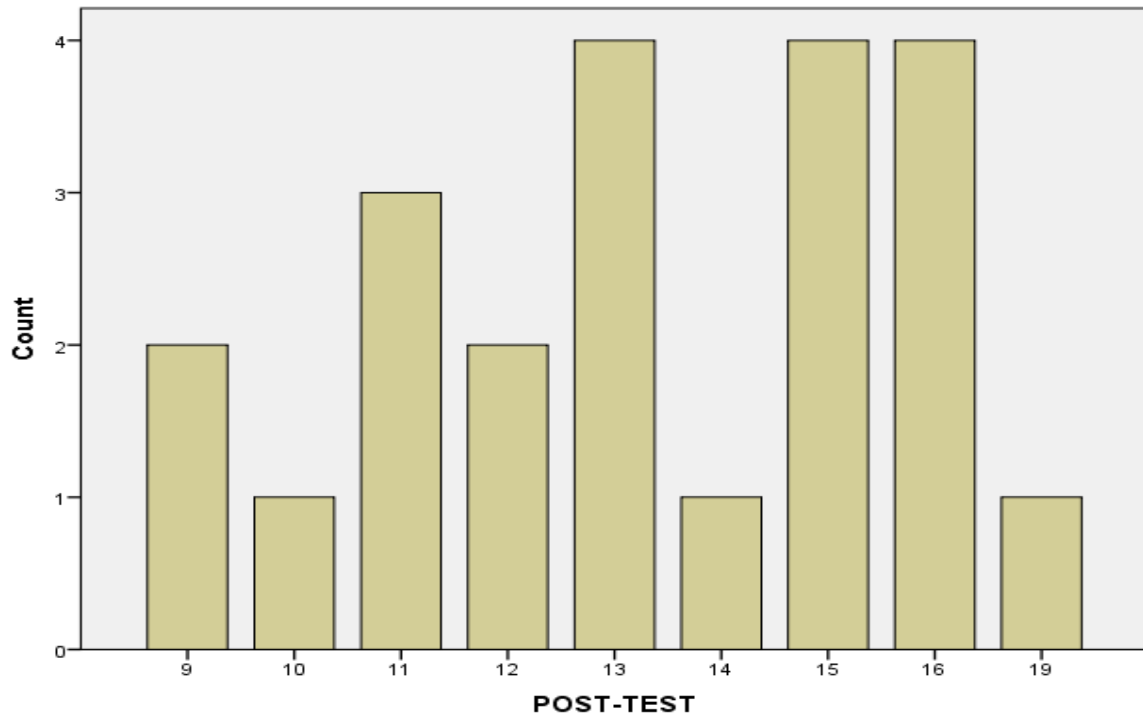
Figure 18. Histogram representing the immediate post-test scores of all non-caregiving staff combined across all facilities

D.5.5 Unidentified jobs

A number of participants did not list their job or department on either their pre-test or their post-test, therefore there was no way to identify which forms belonged to whom. The administrators at each facility did have a sign in sheet with the participants' numbers so that they could in theory provide the PI with missing information such as this, however, due to the realities of their day to day workloads, it has proven difficult to get primary follow up from the administrators. Please see "limitations" for further information. Based on the demographic information collected at each facility, each of these data points could come from a variety of departments, but most are from RCAs and LPNs/RNs. There is no way to discern any of these respondents' job identities, however, without speculation.

Table 152. Descriptive statistics of pre-test vs. immediate post-test scores of unidentified individuals combined across all facilities

FORM	JOB	PRE-TEST	PERCENT CORRECT	POST-TEST	PERCENT CORRECT	RAW CHANGE	PERCENT CHANGE	FACILITY
14		9	40.91	7	31.82	-2	-9.09	1
2		9	40.91	13	59.09	4	18.18	3
22		8	36.36	9	40.91	1	4.55	3
23		12	54.55	12	54.55	0	0.00	3
26		10	45.45	15	68.18	5	22.73	3
9		15	68.18	15	68.18	0	0.00	4
1		15	68.18	15	68.18	0	0.00	5
2		9	40.91	17	77.27	8	36.36	5
6		15	68.18	14	63.64	-1	-4.55	5
3		15	68.18	17	77.27	2	9.09	5
4		11	50.00	11	50.00	0	0.00	5
8		13	59.09	18	81.82	5	22.73	5
10		9	40.91	14	63.64	5	22.73	5
MEAN		11.54	52.45	13.62	61.89	2.08	9.44	
SD		2.76	12.53	3.20	14.56	3.01	13.69	
MEDIAN		11.00	50.00	14.00	63.64	1.00	4.55	

Total possible points: 22.

"FORMS" refers to the assigned number for participant at a given facility/presentation.
"FACILITY" refers to the assigned facility number.

PRE-TEST SCORES: Range 8-15 points; mean score 11.54; SD 2.76; median 11 points.
PERCENT CORRECT ON PRE-TEST: Range 36.36-68.18%; mean 52.45%; SD 12.53; median 50% .
POST-TEST SCORES: Range 7-18 points; mean 13.62; SD 3.2; median 14 points.
PERCENT CORRECT ON POST-TEST: Range 31.82-81.82%; mean 61.89%; SD 14.56; median 63.64%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -2-8 points; mean 2.08 points; SD 3.01; median 1 points.
PERCENT CHANGE: Range -9.09-36.36%; mean 9.44%; SD 13.69; median 4.55%.

Table 153. Comparative statistics of combined unidentified individuals' pre-test vs. immediate post-test scores, as analyzed by IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	13	8	15	11.54	2.757
POST-TEST	13	7	18	13.62	3.203
Valid N (listwise)	13				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST-TEST - PRE-TEST	Negative Ranks	2[a]	2.50	5.00
	Positive Ranks	7[b]	5.71	40.00
	Ties	4[c]		
	Total	13		

a. POST-TEST < PRE-TEST

b. POST-TEST > PRE-TEST

c. POST-TEST = PRE-TEST

Test Statistics[a]

	POST-TEST - PRE-TEST
Z	-2.084[b]
Asymp. Sig. (2-tailed)	.037

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The performance on the tests of the "unidentified" group demonstrated statistically significant improvement from pre-test to post-test, with a Z-score of -2.084 and a significance level of .037. This difference is not as great as some of the other groups, however it is statistically significant nonetheless.
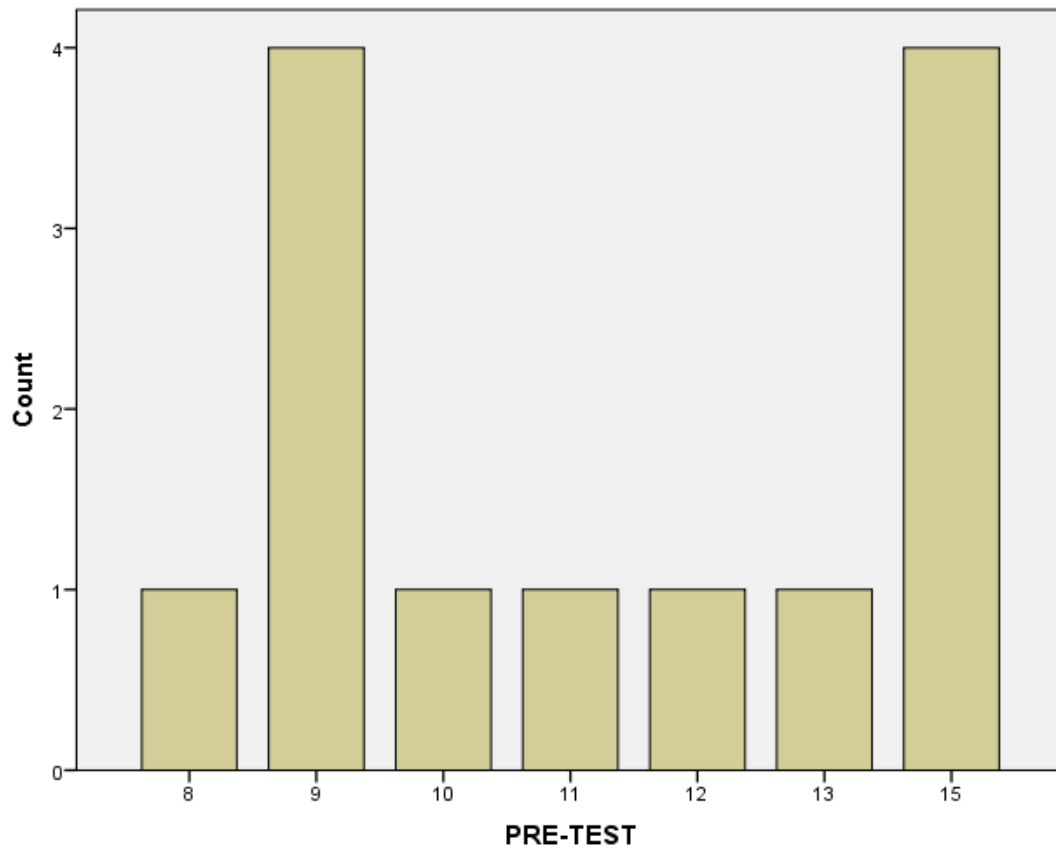
Figure 19. Histogram representing pre-test scores for all unidentified individuals across all facilities
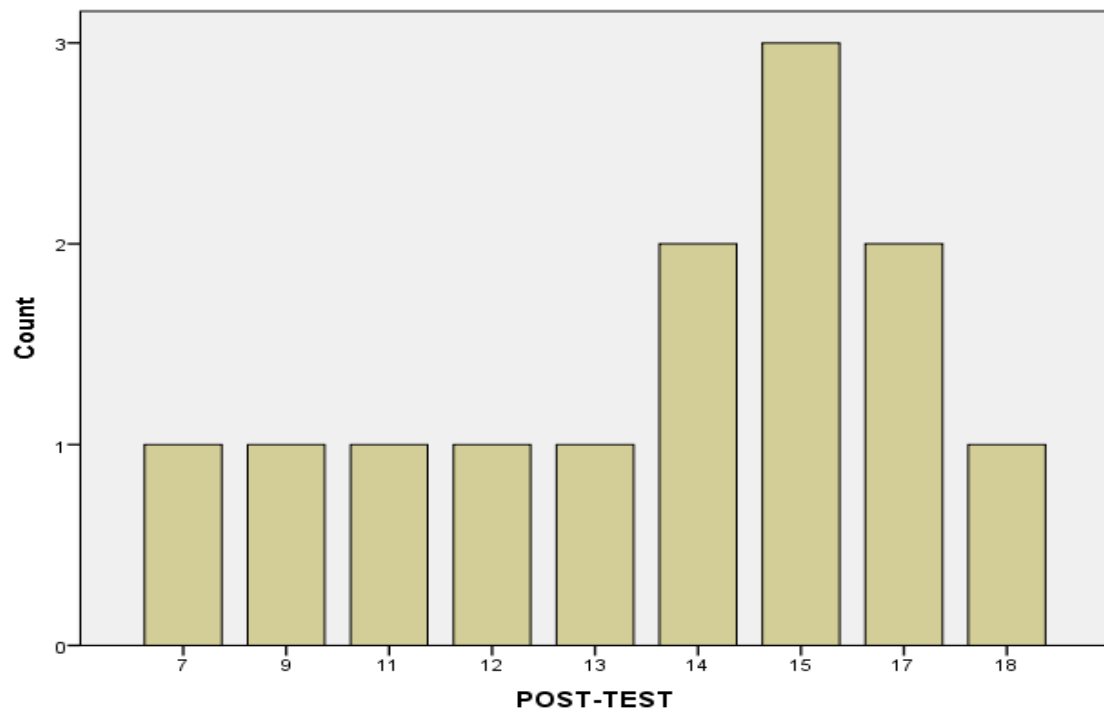
Figure 20. Histogram representing the immediate post-test scores of all unidentified individuals across all facilities

D.6   EDUCATIONAL PROGRAM – FOLLOW UP DATA

This section contains the data from the facilities from a minimum of one month after the original presentation. Facility 5 is somewhat incomplete and 6 is missing. The administrator at Facility 5 was ill and out of the facility for approximately 3-4 months, and still out at the time the results were written. Although others within the facility were designated to collect the data, time constraints due to extra job responsibilities and inability to access information limited their ability to do so. Facility 6 has been non-responsive.

D.6.1   Facility 1 – comparisons of pre-test, immediate post-test and follow up post-test scores and related data

This section contains the raw data from Facility 1 for the one-month follow up. This includes a description of the participants who completed the follow up test, as well as descriptive statistics for performance on the follow up post-test compared to both the pre-test and the initial post-test. Lastly, the feedback from those who participated in the follow up testing is included. The Likert scale is very similar to the original, however changed slightly to reflect the passage of time and the potential influence of the program since its presentation.

   To review, Facility 1 is part of a larger company operating numerous senior communities. This particular facility has a personal care home section, and a skilled nursing facility section, both housed in the same building. The presentation included only the PCH staff. Initially, the presentation was given over two days, the first in the morning to capture staff leaving the 11-7 shift and arriving 7-3 shift. The second was given in the afternoon on the following day to

capture the departing 7-3 shift and arriving 3-11 shift. A change was made in the second day, with the supervisors from other departments requiring their staff to attend as well.

The original presentations were given November 25 and 26, 2013, and although the forms were left for completion at approximately four weeks later, the tests were completed on February 17 and 18, 2014, more than two months after the initial presentation. Based on the identification numbers, it appeared that no one from the first presentation participated in the follow up post-test.

Table 154. Facility 1: Descriptive information of participants in follow up testing

JOB	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH	DATE
	F		AA	24	16	
	F	PNTA	AA	15	5	
RCA	F	PNTA	AA	12.5	8	2/17/2014
LPN	F	62	CAUC	33	13	2/17/2014
LPN	F	PNTA	AA	20	15	2/17/2014
RCA	F	53	AA	16	16	
HOUSE	F		AA	15	15	2/18/2014
HOUSE	F	PNTA	AA	4.5	4.5	2/18/2014
HOUSE	M	24	AA	5	1	2/18/2014
HOUSE	M	53	PNTA	18	18	2/18/2014
ENVIRON	M	31	MIX RAC	0	0	2/22/2014

RCA=Resident care aide   LPN=Licensed Practical Nurse
HOUSE=Housekeeping   ENVIRON=Environmental services
PNTA=Prefer not to answer   AA=African-American
MIX RAC=Mixed races   CAUC=Caucasian

Table 155. Facility 1: Follow up post-test raw data

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
	TEST	3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1	HOUSE	2	1	1	1	1	1	1	6	1	1	1	0	1	1	1	20
2	HOUSE	-1	0	1	0	1	1	1	2	1	0	0	1	1	1	1	10
3	HOUSE	-1	1	1	1	1	1	1	4	1	1	1	0	0	1	1	14
5	HOUSE	-1	1	1	0	0	1	1	1	0	0	1	0	1	0	0	6
7	LPN	1	0	1	1	0	-1	1	4	1	0	0	1	1	0	1	11
8	LPN	1	0	1	1	0	-1	1	4	1	0	0	0	1	0	1	10
9	RCA	1	1	1	1	1	-1	1	3	1	1	1	0	1	1	1	14
12	RCA	1	1	1	0	1	0	1	5	1	1	1	0	0	1	0	14
14		1	0	1	0	1	0	1	4	1	0	0	1	0	0	1	11
18	RCA	1	0	1	0	0	0	1	2	1	0	0	0	1	1	1	9

"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 156. Facility 1: Follow up post-test data, descriptive statistics

FORM	JOB	PRE	% RIGHT	POST	% RIGHT	RAW CHG	% CHG	1 MONTH POST	% RIGHT 1 MONTH POST	1 MONTH RAW CHG VS PRE TEST	1 MONTH % CHG VS PRE TEST	1 MONTH RAW CHG VS POST TEST	1 MONTH % CHG VS POST TEST
1	HOUSE	12	54.55	16	72.73	4	18.18	20	90.91	8	36.36	4	18.18
2	HOUSE	4	18.18	10	45.45	6	27.27	11	50.00	7	31.82	1	4.55
3	HOUSE	9	40.91	15	68.18	6	27.27	14	63.64	5	22.73	-1	-4.55
4	HOUSE	3	13.64	9	40.91	6	27.27	10	45.45	7	31.82	1	4.55
5	HOUSE	5	22.73	11	50.00	6	27.27	6	27.27	1	4.55	-5	-22.73
7	LPN	9	40.91	13	59.09	4	18.18	11	50.00	2	9.09	-2	-9.09
8	LPN	9	40.91	13	59.09	4	18.18	10	45.45	1	4.55	-3	-13.64
9	RCA	10	45.45	13	59.09	3	13.64	14	63.64	4	18.18	1	4.55
12	RCA	10	45.45	16	72.73	6	27.27	14	63.64	4	18.18	-2	-9.09
14		9	40.91	7	31.82	-2	-9.09	11	50.00	2	9.09	4	18.18
28	RCA	8	36.36	14	63.64	6	27.27	9	40.91	1	4.55	-5	-22.73
MEAN		8.00	36.36	12.45	56.61	4.45	20.25	11.82	53.72	3.82	17.36	-0.64	-2.89
SD		2.79	12.69	2.91	13.23	2.42	11.02	3.63	16.49	2.64	11.99	3.14	14.27
MED		9.00	40.91	13.00	59.09	6.00	27.27	11.00	50.00	4.00	18.18	-1.00	-4.55

Total possible points: 22.

PRE-TEST SCORES: Range 3-12 points; mean score 8; SD 2.79; median 9 points.
PERCENT CORRECT ON PRE-TEST: Range 13.64-54.55%; mean 36.36%; SD 12.69; median 40.91% .
POST-TEST SCORES: Range 7-16 points; mean 12.45; SD 2.91; median 13 points.
PERCENT CORRECT ON POST-TEST: Range 31.82-72.73%; mean 56.61%; SD 13.23; median 59.09%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -2-6 points; mean 4.45 points; SD 2.42; median 6 points.
PERCENT CHANGE: Range -9.09-27.27%; mean 20.25%; SD 11.02; median 27.27%.
1-MONTH POST-TEST SCORES: Range 6-20; mean 11.82; SD 3.63; median 11.
PERCENT CORRECT 1-MONTH: Range 27.27-90.91%; mean 53.72; SD 16.49; median 50%.
RAW CHANGE FROM PRE-TEST: Range 1-8; mean 3.82; SD 2.64; median 4.
PERCENT CHANGE FROM PRE-TEST: Range 4.55-36.36%; mean 17.36; SD 11.99; median 18.18.
RAW CHANGE FROM POST-TEST: Range -5-4 points; mean -0.64; SD 3.14; median -1.
PERCENT CHANGE FROM POST-TEST: Range -22.73-18.18%; mean -2.89; SD 14.27; median -4.55%.

MISSING DATA: 2 RCAs and 1 LPN are missing from the pre-test original pre-test/post-test analysis, as no 1-month follow up tests were submitted.

Table 157. Facility 1: Comparison of pre-test, immediate post-test and follow up post-test scores, participants matched for completion on all three tests, utilizing the Friedman test using IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	11	3	12	8.00	2.793
POST	11	7	16	12.45	2.911
ONE MONTH POST	11	6	20	11.82	3.628
Valid N (listwise)	11				

Friedman Test

Ranks

	Mean Rank
PRE	1.09
POST	2.45
ONE MONTH POST	2.45

Test Statistics[a]

N	11
Chi-Square	13.636
df	2
Asymp. Sig.	.001

a. Friedman Test

The above analysis indicates a statistically significant change among the scores, with a significance level set at 0.05 surpassed at 0.001. To determine where the significance lies, more specific analysis at each level must be performed.

Table 158. Facility 1: Comparison of pre-test scores versus immediate post-test scores, with sample matched for completion on all three administrations of testing, utilizing IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	11	3	12	8.00	2.793
POST	11	7	16	12.45	2.911
Valid N (listwise)	11				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST - PRE	Negative Ranks	1[a]	1.00	1.00
	Positive Ranks	10[b]	6.50	65.00
	Ties	0[c]		
	Total	11		

a. POST < PRE

b. POST > PRE

c. POST = PRE

Test Statistics[a]

	POST - PRE
Z	-2.902[b]
Asymp. Sig. (2-tailed)	.004

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Analyses indicate that a statistically significant improvement of test scores from pre-test to immediate post-test, thus suggesting that the improvement is not likely due to chance, but most likely due to the educational program.

Table 159. Facility 1: Comparison of pre-test scores versus follow up post-test scores, with sample matched for completion on all three administrations of testing, utilizing IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	11	3	12	8.00	2.793
ONE MONTH POST	11	6	20	11.82	3.628
Valid N (listwise)	11				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
ONE MONTH POST - PRE	Negative Ranks	0[a]	.00	.00
	Positive Ranks	11[b]	6.00	66.00
	Ties	0[c]		
	Total	11		

a. ONE MONTH POST < PRE

b. ONE MONTH POST > PRE

c. ONE MONTH POST = PRE

Test Statistics[a]

	ONE MONTH POST - PRE
Z	-2.944[b]
Asymp. Sig. (2-tailed)	.003

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The difference between the pre-test and the follow up post-test was also statistically significant, indicating that the participants retained the information over time.

Table 160. Facility 1: Comparison of immediate post-test scores versus follow up post-test scores, with sample matched for completion on all three administrations of testing, utilizing IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POST	11	7	16	12.45	2.911
ONE MONTH POST	11	6	20	11.82	3.628
Valid N (listwise)	11				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
ONE MONTH POST - POST	Negative Ranks	6[a]	6.92	41.50
	Positive Ranks	5[b]	4.90	24.50
	Ties	0[c]		
	Total	11		

a. ONE MONTH POST < POST

b. ONE MONTH POST > POST

c. ONE MONTH POST = POST

Test Statistics[a]

	ONE MONTH POST - POST
Z	-.761[b]
Asymp. Sig. (2-tailed)	.447

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

These analyses indicate that, although there was a slight decrease in performance on the follow up post-test compared to the immediate post-test scores, the change is not significant statistically. This, combined with the other analyses, indicates that learning occurred and was retained over more than a month in the participants who completed all three tests administrations. The decline that did occur from the immediate post-test to the follow up post-test was relatively minor.

Table 161. Facility 1: follow up program evaluations

	#1	#2	#3	#4	#5	COMMENTS
	5	5	5	5	5	
	5	5	5	5	5	
	5	5	5	5	5	
	4	4	4	4	4	
	4	4	4	4	4	
	4	4	5	4	4	
	5	5	5	4	4	
	3	3	3	3	3	
	2	2	2	0	0	enviromental svcs
	4	1	1	1	0	
MEAN	4.10	3.80	3.90	3.50	3.40	
SD	0.99	1.40	1.45	1.72	1.90	
MEDIAN	4.00	4.00	4.50	4.00	4.00	

Evaluation questions corresponding with raw data scores:
Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1----------------2----------------3----------------4----------------5

1.) This program was easy to understand. ***Range: 2-5; mean 4.1; SD 0.99; median 4.***
2.) This program increased my understanding of the topic. ***Range: 1-5; mean: 3.8; SD 1.4; median: 4.***
3.) I have used this information in my day-to-day work. ***Range: 1-5; mean 3.9; SD 1.45; median: 4.5.***
4.) This information has helped me care for the residents better. ***Range 0-5; mean 3.5; SD 1.72; median 4.***
5.) I would recommend this program to be used in the future. ***Range 0-5; mean 3.4; SD 1.9; median 4.***

TOTAL PROGRAM EVALUATION: Range 0-5; mean 3.74; SD 1.48; median 4.

Note: Only 3 of the participants were of the intended audience, and five total are caregiving staff. At least 1 was from environmental services, a department not impacted by the content of this program, as noted in his evaluation. The remainder are from housekeeping, with one unknown.

D.6.2 Facility 2

This section contains the raw data from Facility 2 for the one-month follow up. This includes a description of the participants who completed the follow up test, as well as descriptive statistics for performance on the follow up post-test compared to both the pre-test and the initial post-test. Lastly, the feedback from those who participated in the follow up testing is included. The Likert scale is very similar to the original, however changed slightly to reflect the passage of time and the potential influence of the program since its presentation.

To review, Facility 2 is part of a larger company operating numerous senior communities. The administrator made the presentation mandatory for all staff, so caregiving staff (non-professional and professional), as well as kitchen staff, dietary aides, housekeeping, administrative staff and even a driver were all in attendance for the initial presentation. The initial presentation was given on December 6, 2013, and the follow tests were completed from January 15, 2014 to approximately January 24, 2014. On the date of the initial presentation, due to a late start time, a limited number of participants who completed the pre-test stayed to complete the post-test. The follow up test results included individuals who completed both, as well as some who had only completed the pre-test initially.

Table 162. Facility 2: Descriptive information of participants participating in follow up testing

JOB	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
DIET	M	80	CAUC	15	15
HOUSE	F	57	PNTA	8	4
HOUSE	F	38	CAUC	20	12
HOUSE	F	61	CAUC	8.5	8.5
KITCHEN	M	38	CAUC	1	1
KITCHEN	M	55	CAUC	13	12
KITCHEN	M	55	CAUC	13	2
LPN	F	52	CAUC	10.5	10.5
LPN	F	PNTA	CAUC	9.5	8.5
LPN	PNTA	PNTA	CAUC	14	14
MAIN	M	60	CAUC	11	11
OFFICE	F	42	CAUC	13	13
RCA	F	28	CAUC	10	10
RCA	F	27	CAUC	2	0.5
RCA	F	32	CAUC	0.17	0.17
RCA	F	26	CAUC	5	5
	M	33	AA	0.25	0.25

DIET=Dietary   HOUSE=Housekeeping   Kitchen=Kitchen staff
LPN=Licensed practical nurse   MAIN=Maintenance
OFFICE=Office/administrative staff   RCA=Resident care aide
PNTA=Prefer not to answer   CAUC=Caucasian
AA=African-American

Table 163. Facility 2: Follow up test answers raw data

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
		3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1		1	1	1	0	1	-1	1	1	1	1	1	1	0	1	1	11
2	RCA	1	1	1	0	1	1	1	6	1	1	1	1	1	1	1	19
3	OFFICE	-1	1	1	1	1	1	1	5	1	1	1	0	1	1	1	16
4		2	1	1	0	0	1	1	3	1	1	1	1	1	0	1	15
5	RCA	2	0	1	1	1	-2	1	5	1	1	1	1	1	1	0	15
6	HOUSE	2	0	1	0	1	1	1	5	1	1	1	1	1	1	1	18
8	DIET	1	1	1	0	0	1	1	1	1	1	1	0	1	1	1	12
9	OFFICE	-1	0	0	0	1	1	1	3	1	1	0	1	1	1	0	10
12	HOUSE	2	0	1	0	1	1	1	5	1	1	1	1	1	1	1	18
13	HOUSE	2	0	1	0	1	1	1	5	1	1	1	1	1	1	0	17
14		0	1	1	0	1	1	1	5	1	1	1	0	1	1	1	16
15	KITCHEN	-1	1	1	1	1	1	1	4	1	1	1	0	1	1	1	15
17	KITCHEN	1	0	1	0	1	1	1	2	1	1	1	0	1	1	1	13
20	DIET	-1	1	1	1	0	1	1	4	1	1	1	0	1	1	1	14
24b	RCA	0	0	1	0	1	-1	1	3	1	1	1	1	1	1	1	12
25	RCA	-2	0	1	0	1	-1	1	3	1	1	1	0	1	1	1	9
No #		-2	0	1	1	0	1	1	2	0	1	0	0	1	1	1	8

"TEST" indicates the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

MISSING DATA FROM PRE-TEST:
Activities   1
Kitchen   3
Nursing   3
RCA   1
Unknown   6

Per administrator, "Anyone who didn't complete a test no longer works here."

Table 164. Facility 2: Raw score comparisons among pre-test, post-test and follow up post-test, descriptive statistics. Only participants with a minimum of two completed tests are included

FORM	JOB	PRE-TEST	% RIGHT	POST	% RIGHT	RAW CHG	% CHG	FOLLOW UP	% RIGHT	RAW CHG PRE	% CHG PRE	RAW CHG POST	% CHG POST
2	RCA	13	59.09	14	63.64	1	4.55	19	86.36	6	27.27	5	22.73
3	OFFICE	9	40.91	12	54.55	3	13.64	16	72.73	7	31.82	4	18.18
4		7	31.82	14	63.64	7	31.82	15	68.18	8	36.36	1	4.55
5	RCA	11	50.00	12	54.55	1	4.55	15	68.18	4	18.18	3	13.64
6	HOUSE	15	68.18					18	81.82	3	13.64		
7	ACTIV	11	50.00	11	50.00	0	0.00						
8	DIET	8	36.36					12	54.55	4	18.18		
9	OFFICE	11	50.00					10	45.45	-1	-4.55		
11	LPN	14	63.64	12	54.55	-2	-9.09	11	50.00	-3	-13.64	-1	-4.55
12	HOUSE	13	59.09	11	50.00	-2	-9.09	18	81.82	5	22.73	7	31.82
13	HOUSE	7	31.82	13	59.09	6	27.27	17	77.27	10	45.45	4	18.18
14		10	45.45					16	72.73	6	27.27		
15	KITCHEN	12	54.55					15	68.18	3	13.64		
17	KITCHEN	12	54.55					13	59.09	1	4.55		
19	RCA	14	63.64	11	50.00	-3	-13.64						
2122	KITCHEN	7	31.82					14	63.64	7	31.82		
24b	RCA	12	54.55					12	54.55	0	0.00		
25	RCA	8	36.36					9	40.91	1	4.55		
No #		5	22.73					8	36.36	3	13.64		
MEAN		10.47	47.61	12.22	55.56	1.22	5.56	14.00	63.64	3.76	17.11	3.29	14.94
SD		2.86	12.98	1.20	5.46	3.53	16.03	3.28	14.90	3.44	15.62	2.63	11.94
MEDIAN		11.00	50.00	12	54.55	1.00	4.55	15.00	68.18	4.00	18.18	4.00	18.18

TOTAL POSSIBLE POINTS: 22.   Empty boxes indicate missing data points.

PRE-TEST SCORES: Range 5-15 points; mean score 10:47; SD 2.86; median 11 points.
PERCENT CORRECT ON PRE-TEST: Range 22.73 -68.18%;mean 47.61%; SD 12.98; median 50% .
POST-TEST SCORES: Range 11-14 points; mean 12.22; SD 1.2; median 12 points.
PERCENT CORRECT ON POST-TEST: Range 50-63.64%; mean 55.56%; SD 5.46; median 54.55%.
RAW SCORE CHANGE FROM PRE-TEST TO POST-TEST: Range points -3-7 points; mean 1.22 points; SD 3.53; median 1 points.
PERCENT CHANGE: Range -13.64-31.84%; mean 5.56%; SD 16.03; median 4.55%.
FOLLOW UP TEST SCORES: Range 8-19 points; mean 14; SD 3.28; median 15 points.
PERCENT CORRECT ON FOLLOW UP TEST: Range 36.36-81.82%; mean 63.64%; SD 14.9; median 68.18%.
RAW SCORE CHANGE FROM PRE-TEST TO FOLLOW UP TEST: Range -3-10 points; mean 3.76 points; SD 3.44; median 4 points.

PERCENT CHANGE FROM PRE-TEST TO FOLLOW UP TEST: Range -13.34-45.45%; mean
3.76%; SD 3.44; median 4%.

RAW SCORE CHANGE FROM POST-TEST TO FOLLOW UP TEST: Range -1-7 points; mean 3.29
points; SD 2.63; median 4 points.

PERCENT CHANGE FROM POST-TEST TO FOLLOW UP TEST: Range -4.55-31.82%; mean
14.94%; SD 11.94%; median 18.18%.

Table 165. Facility 2: Comparison of pre-test, immediate post-test and follow up post-test, matched participants (participants completed a minimum of 2 of 3 tests) across all tests, utilizing IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	19	5	15	10.47	2.855
POST	9	11	14	12.22	1.202
1 MONTH	17	8	19	14.00	3.279
Valid N (listwise)	7				

Friedman Test

Ranks

	Mean Rank
PRE	1.43
POST	1.86
1 MONTH	2.71

Test Statistics[a]

N	7
Chi-Square	6.000
df	2
Asymp. Sig.	.050

a. Friedman Test

Utilizing data from matched participants from each administration of the test, a statistically significant change in scores is noted. To analyze in more detail, each step in the administration of the tests will be analyzed.

Table 166. Facility 2: Comparison of pre-test to immediate post-test scores from matched participants across all tests (as above), utilizing IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	19	5	15	10.47	2.855
POST	9	11	14	12.22	1.202
Valid N (listwise)	9				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST - PRE	Negative Ranks	3[a]	4.17	12.50
	Positive Ranks	5[b]	4.70	23.50
	Ties	1[c]		
	Total	9		

a. POST < PRE

b. POST > PRE

c. POST = PRE

Test Statistics[a]

	POST - PRE
Z	-.773[b]
Asymp. Sig. (2-tailed)	.440

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The data utilized for this analysis include missing post-test data points, as these data are matched across all three test administrations. Previous analysis of the pre-test and matched immediate post-test found a significant difference between the test scores. Utilizing this sample, however, the difference between the two scores is not significant. The n for the immediate post-test scores is less than one half of the n for the pre-test scores (pre-test n = 19; post-test n = 9), which may explain the difference in the results. In addition, at this particular facility, there were issues with the timeliness of the program (as presented under the Discussion/Limitations section of the body of the text), which may have resulted in hurried, and thus faulty, performance on the immediate post-test.

Table 167. Facility 2: Comparison of pre-test and follow up post-test scores form matched participants across all tests (as above), utilizing IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	19	5	15	10.47	2.855
1 MONTH	17	8	19	14.00	3.279
Valid N (listwise)	17				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
1 MONTH - PRE	Negative Ranks	2[a]	3.75	7.50
	Positive Ranks	14[b]	9.18	128.50
	Ties	1[c]		
	Total	17		

a. 1 MONTH < PRE

b. 1 MONTH > PRE

c. 1 MONTH = PRE

Test Statistics[a]

	1 MONTH - PRE
Z	-3.137[b]
Asymp. Sig. (2-tailed)	.002

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The difference between the scores of the participants who took the pre-test compared to those who took the follow up post-test is statistically significant, indicating that this change is not due to chance, but likely due to the educational program that was presented. The n of each group analyzed here is much more similar (pre-test = 19; follow up post-test = 17), possibly contributing the difference observed here, but not with the immediate post-test.

Table 168. Facility 2: Comparison of immediate post-test and follow up post-test scores from matched participants across all tests (as above), utilizing IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POST	9	11	14	12.22	1.202
1 MONTH	17	8	19	14.00	3.279
Valid N (listwise)	7				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
1 MONTH - POST	Negative Ranks	1[a]	1.50	1.50
	Positive Ranks	6[b]	4.42	26.50
	Ties	0[c]		
	Total	7		

a. 1 MONTH < POST

b. 1 MONTH > POST

c. 1 MONTH = POST

Test Statistics[a]

	1 MONTH - POST
Z	-2.120[b]
Asymp. Sig. (2-tailed)	.034

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

A statistical significance was found between the scores of the immediate post-test and the follow up test, with an increase in the scores of the follow up post-test. The *n* remains small (immediate post-test = 9; follow up post-test = 19, with only 7 points in common), however.

Table 169. Facility 2: Follow up program evaluations, descriptive statistics

	#1	#2	#3	#4	#5	COMMENTS
	5	5	5	5	5	
	5	5	5	5	5	
	5	5	5	5	5	
	5	5	5	5	5	
	5	5	5	5	5	
	5	5	5	5	5	
	4	2.5	4	3.5	3	
	3	3	3	5	3	
	5	5	5	5	2	PROGRAM TOO LONG
	5	5	5	5	2	PROGRAM TOO LONG
	5	5	5	5	3	PROGRAM TOO LONG
	5	5	4	5	5	
	5	4	5	4	4	
	4	4	4	4	4	
	3	4	3	4	4	
	3	4	0	2	3	
MEAN	4.50	4.47	4.25	4.53	3.94	
SD	0.82	0.81	1.34	0.85	1.12	
MEDIAN	5.00	5.00	5.00	5.00	4.00	

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2----------------3----------------4----------------5

1.) This program was easy to understand. *Range: 3-5; mean: 4.5; SD: 0.82; median: 5.*
2.) This program increased my understanding of the topic. *Range: 2.5-5; mean: 4.47; SD: 0.81; median: 5.*
3.) I have used this information in my day-to-day work. *Range: 0-5; mean: 4.25; SD: 1.34; median: 5.*
4.) This information has helped me care for the residents better. *Range: 1-5; mean: 4.53; SD: 0.85; median: 5.*
5.) I would recommend this program to be used in the future. *Range: 2-5; mean: 3.94; SD: 1.12; median: 4.*

TOTAL PROGRAM EVALUATION: Range: 0-5; mean: 4.34; SD: 1.01; median: 5.

Note: Of follow up participants, only 4 were of the intended audience (RCAs) and 3 potential audience (housekeeping); 3 professional staff (LPNs) were included, and 7 with limited to no resident interaction (3 kitchen, 1 each dietary, maintenance, office and unknown).

D.6.3 Facility 3 – Comparative statistics for pre-test, immediate post-test, and follow up post-test, and related data

This section contains the raw data from Facility 3 for the one-month follow up. This includes a description of the participants who completed the follow up test, as well as descriptive statistics for performance on the follow up post-test compared to both the pre-test and the initial post-test. Lastly, the feedback from those who participated in the follow up testing is included. The Likert scale is very similar to the original, however changed slightly to reflect the passage of time and the potential influence of the program since its presentation.

To review, Facility 3 is part of a larger company operating numerous senior communities. This particular facility has independent living, a personal care home section, and a skilled nursing facility. The presentation included only the PCH staff. The presentation was given once in the afternoon on December 13, 2013 to capture the departing 7-3 shift and arriving 3-11 shift. The program was voluntary for all participants. Individuals from various departments attended. Follow up testing was completed between January 27, 2014 and February 21, 2014. An error was made with the assigned numbers and the sign in sheets on the initial presentation date. The presentation became busy as participants were coming in, and the facility established two sign in sheets for their records, in addition to the sign in sheet with the assigned numbers for test responses. At the time the follow up tests were done, the sign in sheet with the assigned numbers for the test responses was apparently not available, and the two sign in sheets established by the facility were used. As a result, the data were returned with numbers identified as A1, B1, et cetera, to indicate which sign in sheet was used. It was thus unclear on some of the follow up tests which assigned pre-tests and immediate post-tests corresponded specifically with which follow up tests. Thus, analyses were completed on the tests that could definitely be identified to

compare individual differences among the tests. To provide complete data, however, the raw data for each of the test administrations (pre-test, immediate post-test, follow up post-test) has been provided, and the ranges, means, standard deviations and medians for each of those administrations has presented.

Table 170. Facility 3: Descriptive information of individuals who participated in follow up testing

JOB	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
KITCHEN	F	55	CAUC	9.5	7
LPN	F	26	CAUC		
RCA	F	22	CAUC	0.5	0.5
LPN	F	30	CAUC	2.5	2
KITCHEN	M	50	CAUC	9.5	9.5
LPN	F	29	CAUC	6	3
OFFICE	F	60	CAUC	14	14
OFFICE	F	PNTA	CAUC	1.5	1.5
LPN	F		CAUC	15	1
OFFICE	F	72	CAUC	10	3.5
HOUSE	F	53	CAUC	20	10
HOUSE	F	53	CAUC	6.5	6.5
MAINT	M	54	CAUC	8	8
RCA	F	62	CAUC	23	12
RCA	F	54.5	CAUC	20	20
RCA	F	20	CAUC	2	0.5
LPN	F	56	CAUC	25	10
OFFICE	F	PNTA	CAUC	15	20
RCA	F	44	CAUC	4	4
RCA	F	50	HISP	20	14
RCA	F	61	CAUC	20.5	1.5
RCA	F	22	CAUC	2	1.5
DRIVER	F	59	MIX RACE	16	16

MAINT=Maintenance PNTA=Prefer Not To Answer
LPN= Licensed Practical Nurse RCA= Resident Care Aide
KITCHEN=Cook, dishwasher OFFICE=Receptionist, Administrative Asst., Administrator
HOUSE=Housekeeping CAUC=Caucasian
HISP=Hispanic MIX RACE=Mixed Race

Table 171. Facility 3: Follow up post-test results, raw data

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
	TEST	3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1A	RCA	3	0	1	0	1	-1	1	4	1	1	1	0	1	1	1	15
1B	RCA	2	0	1	0	1	-2	1	2	1	1	1	1	1	1	1	12
2B	RCA	0	0	1	0	1	-2	1	3	1	0	1	1	1	1	1	10
A3	ACT	2	0	1	1	0	1	1	5	0	1	1	1	1	1	1	17
B3	HOUSE	0	0	1	0	1	-1	1	3	1	1	1	0	1	1	1	11
B5	HOUSE	1	0	1	1	1	-1	1	2	1	1	1	1	0	1	1	12
A6	OFFICE	0	0	1	1	0	1	1	4	1	0	1	0	1	1	0	12
6	RCA	2	0	1	1	1	0	0	4	1	1	1	1	1	1	1	16
B6	HOUSE	1	0	1	0	0	1	1	4	1	1	1	0	0	1	1	13
A7	RCA	2	0	0	1	0	1	1	3	1	1	1	0	0	1	1	13
A8	MAIN	-1	1	1	1	1	-3	1	6	1	1	1	1	1	1	1	14
A9	MAIN	1	0	1	0	1	-1	1	4	1	1	1	0	1	1	1	13
B9	NRSG	0	0	1	0	0	1	1	6	1	0	1	0	1	1	1	14
13		2	1	1	0	1	-2	1	6	1	1	1	1	1	1	1	17
A14	NRSG	-3	1	1	0	1	-2	1	6	1	1	1	1	1	1	1	12
15	NRSG	0	0	1	0	1	-1	1	6	1	1	1	1	1	1	1	15
16	OFFICE	2	1	1	1	1	0	1	3	1	1	1	1	1	1	1	17
17	NRSG	3	0	1	0	1	0	1	5	1	1	1	0	1	1	1	17
19	NRSG	1	0	1	1	1	-2	1	3	1	0	1	0	1	1	1	11
20	NRSG	1	1	1	1	1	1	1	5	1	1	1	0	1	1	1	18
		-1	0	1	0	1	-1	1	0	1	1	1	0	1	1	1	7
		-1	0	1	1	0	1	1	0	0	0	0	0	0	1	1	5
	NRSG	2	0	0	1	1	1	1	4	1	1	1	1	1	1	1	17
	NRSG	3	1	1	0	1	1	1	5	1	1	1	1	1	1	1	20

TOTAL POSSIBLE POINTS: 22.
"TEST"=Possible points for each question.   NRSG=Non-specific for RN/LPN or RCA staff
Blank boxes indicate missing information.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.

FACILITY 3 MISSING FOLLOW DATA POINTS
(per Administrator)

- A2   no response/off shift
- B10   on medical leave
- B7   no longer employed
- 18   on medical leave
- 12   no longer employed
- B14   no response

Table 172. Facility 3: Comparison of pre-test, immediate post-test and follow up post-test scores, descriptive statistics. Only data that could be matched to pre-test scores are described in this table

FORM	JOB	PRE	% RIGHT	POST	% RIGHT	RAW CHG	% CHANGE	FOLLOW UP	% RIGHT	RAW CHG PRE	% CHG PRE	RAW CHG POST	% CHG POST
1	RCA	12	54.55	20	90.91	8	36.36	15	68.18	3	13.64	-5	-22.73
3	ACT	9	40.91	19	86.36	10	45.45	17	77.27	8	36.36	-2	-9.09
6	OFFICE	12	54.55	16	72.73	4	18.18	12	54.55	0	0.00	-4	-18.18
7	RCA	7	31.82	14	63.64	7	31.82	13	59.09	6	27.27	-1	-4.55
9	MAINT	7	31.82	9	40.91	2	9.09	13	59.09	6	27.27	4	18.18
13	NRSG	13	59.09	16	72.73	3	13.64	17	77.27	4	18.18	1	4.55
15	NRSG	9	40.91	15	68.18	6	27.27	15	68.18	6	27.27	0	0.00
16	OFFICE	11	50.00	14	63.64	3	13.64	17	77.27	6	27.27	3	13.64
17	RCA	12	54.55	17	77.27	5	22.73	17	77.27	5	22.73	0	0.00
19	RCA	11	50.00	10	45.45	-1	-4.55	11	50.00	0	0.00	1	4.55
MEAN		10.30	46.82	15.00	68.18	4.70	21.36	14.70	66.82	4.40	20.00	-0.30	-1.36
SD		2.16	9.83	3.50	15.89	3.20	14.54	2.31	10.51	2.67	12.16	2.83	12.87
MEDIAN		11.00	50.00	15.50	70.45	4.50	20.45	15.00	68.18	5.50	25.00	0.00	0.00

TOTAL POSSIBLE POINTS: 22.

Table 173. Facility 3: Comparison of pre-test, immediate post-test and follow up post-test for statistically significant changes

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
PRE	13	9.73	2.952	2	13
POST	13	14.15	4.409	3	20
FOLLOW UP	13	13.77	3.983	2	17

Friedman Test

Ranks

	Mean Rank
PRE	1.15
POST	2.54
FOLLOW UP	2.31

Test Statistics[a]

N	13
Chi-Square	15.500
df	2
Asymp. Sig.	.000

a. Friedman Test

Statistical difference among the three tests administrations noted with a significance of .0005. Further testing is necessary to identify where significance lies.

Table 174. Facility 3: Comparison of pre-test and immediate post-test with IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	13	2	13	9.73	2.952
POST	13	3	20	14.15	4.409
Valid N (listwise)	13				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST - PRE	Negative Ranks	1[a]	1.00	1.00
	Positive Ranks	12[b]	7.50	90.00
	Ties	0[c]		
	Total	13		

a. POST < PRE

b. POST > PRE

c. POST = PRE

Test Statistics[a]

	POST - PRE
Z	-3.111[b]
Asymp. Sig. (2-tailed)	.002

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

With this sample from Facility 3, a statistically significant difference was found between the two test administrations. This sample is slightly different from the original comparison between pre-test and immediate post-test, as this includes only those participants also definitely identified in the follow up test as well. Nonetheless, with a significance level set at 0.05, this sample indicates a statistically difference among the two tests.

Table 175. Facility 3: Comparison of pre-test and follow-up post-test scores, utilizing IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	13	2	13	9.73	2.952
FOLLOW UP	13	2	17	13.77	3.983
Valid N (listwise)	13				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW UP - PRE	Negative Ranks	0[a]	.00	.00
	Positive Ranks	11[b]	6.00	66.00
	Ties	2[c]		
	Total	13		

a. FOLLOW UP < PRE

b. FOLLOW UP > PRE

c. FOLLOW UP = PRE

Test Statistics[a]

	FOLLOW UP - PRE
Z	-2.950[b]
Asymp. Sig. (2-tailed)	.003

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

A statistical significance exists between the pre-test and the follow up post-test scores, indicating that the difference in the scores is not likely due to chance, but rather the educational program.

Table 176. Facility 3: Comparison between immediate post-test and follow up post-test

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POST	13	3	20	14.15	4.409
FOLLOW UP	13	2	17	13.77	3.983
Valid N (listwise)	13				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW UP - POST	Negative Ranks	7[a]	5.79	40.50
	Positive Ranks	4[b]	6.38	25.50
	Ties	2[c]		
	Total	13		

a. FOLLOW UP < POST

b. FOLLOW UP > POST

c. FOLLOW UP = POST

Test Statistics[a]

	FOLLOW UP - POST
Z	-.668[b]
Asymp. Sig. (2-tailed)	.504

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Both the range and the mean for the follow-up test are lower (with the standard deviation also being smaller) than the immediate post-test, indicating a decrease in scores over time. Using the Wilcoxon Signed Ranks Test, the difference between the scores of the two tests is not significant. The results of these statistical analyses combined suggest that, in Facility 3, with this sample, learning occurred as a result of the program as indicated by the difference between the pre-test and the immediate post-test; learning that was maintained over time as evidenced by the statistical difference between the scores of the pre-test and the follow up post-test. There was a loss of retention of some information, as evidenced by the lower scores on the follow up post-test compared to the immediate post-test scores, however this degradation in knowledge was not significant.

389

Table 177. Facility 3: Pre-test raw scores and descriptive statistics

FORM	JOB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
	TEST	1	1	3	1	1	6	1	1	1	1	1	1	1	1	1	22
1	RCA	1	0	0	1	1	3	1	0	1	1	0	0	1	1	1	12
2		1	0	-1	1	1	1	0	1	1	1	1	0	0	1	1	9
3	ACT	1	0	-2	1	0	3	0	1	0	1	1	0	1	1	1	9
4	RCA	NA	NA	1	1	0	4	1	0	1	1	0	1	1	0	1	12 of 19
5	LPN	1	0	-3	1	0	4	1	-1	1	1	1	0	1	1	1	9
6	OFFICE	1	0	0	1	0	4	1	1	1	1	1	0	0	1	0	12
7	RCA	1	0	-1	0	0	2	1	1	1	1	1	0	0	0	0	7
8	DRIVER	1	0	-1	1	1	4	1	1	1	1	1	0	1	1	0	13
9	MAINT	0	0	-2	0	0	4	0	1	0	1	0	0	1	1	1	7
10	OFFICE	0	0	-3	1	0	2	0	1	0	1	1	0	1	1	0	5
11	NRSG	1	0	0	1	1	4	1	1	1	1	0	0	1	1	1	14
12	NRSG	1	1	0	1	0	5	0	1	0	1	0	0	1	1	0	12
13	NRSG	0	0	1	1	1	4	1	-1	1	1	1	0	1	1	1	13
14	NRSG	NA	NA	NA	NA	0	0	0	1	1	1	1	NA	NA	NA	NA	(4) of 12
15	NRSG	1	0	2	0	0	1	1	-1	1	1	0	0	1	1	1	9
16	OFFICE	1	1	-1	1	1	3	0	1	0	1	0	1	1	1	0	11
17	RCA	1	0	-1	1	0	3	1	1	1	1	1	0	1	1	1	12
18	OFFICE	0	0	1	1	1	4	0	1	0	0	0	1	0	1	0	10
19	RCA	1	0	0	0	0	4	0	1	1	1	0	1	1	1	0	11
20	OFFICE	1	0	0	1	1	3	1	1	1	1	1	0	0	1	1	13
21	RCA	0	0	1	1	0	3	1	-1	1	1	1	0	0	1	1	10
22		1	0	-1	1	0	3	1	-1	0	1	1	0	1	1	0	8
23		1	0	0	1	0	4	0	-1	1	1	1	1	1	1	1	12
24	HOUSE	1	0	1	0	1	2	1	1	1	1	0	1	0	1	0	11
25	HOUSE	1	0	1	1	1	1	0	1	1	1	1	1	1	1	0	12
26		1	0	-1	1	0	3	0	1	1	0	1	1	1	1	0	10
27	KITCHEN	1	0	-1	0	0	2	0	1	1	1	0	1	1	1	1	9
28		1	0	-1	1	1	1	1	1	0	0	0	1	1	0	0	7
29	NRSG	0	1	0	1	0	3	1	-1	1	1	0	0	1	1	1	10
30	NRSG	NA	NA	NA	NA	NA	NA	NA	NA	1	1	1	0	1	1	0	5 OF 7
MEAN																	10.26
SD																	2.23
MEDIAN																	10.00

Total possible points: 22.

Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question. Participants: 30, 27 tests incomplete.
Score range: 5-19; mean: 10.26; SD: 2.23; median: 10

Table 178. Facility 3: Immediate post-test raw scores and descriptive statistics

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
	TEST	3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1	RCA	2	1	1	1	1	1	1	5	1	1	1	1	1	1	1	20
2		0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	13
3	ACT	3	1	1	1	1	1	1	4	0	1	1	1	1	1	1	19
4	RCA	2	0	1	1	0	1	1	2	1	1	1	1	1	1	1	15
5	LPN	1	0	1	1	1	1	1	5	1	1	1	1	1	1	1	18
6	OFFICE	1	1	1	1	1	1	1	3	1	1	1	1	0	1	1	16
7	RCA	1	1	1	0	1	1	1	3	1	1	1	1	1	0	0	14
8	DRIVER	0	1	1	0	1	1	1	3	1	1	1	1	1	1	1	15
9	MAINT	0	1	1	0	0	-2	1	3	1	0	0	1	1	1	1	9
10	OFFICE	1	1	1	0	1	1	1	3	1	1	1	1	1	1	1	16
11		2	0	1	1	1	1	1	4	1	1	1	1	1	1	1	18
12		1	1	1	1	1	1	1	5	1	1	1	1	1	1	1	19
13		2	0	1	1	1	-1	1	4	1	1	1	1	1	1	1	16
14		0	0	1	1	1	1	1	2	1	1	1	1	1	1	1	14
15		3	0	1	0	1	-1	1	3	1	1	1	1	1	1	1	15
16	OFFICE	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	14
17	RCA	2	0	1	0	1	1	1	4	1	1	1	1	1	1	1	17
18	OFFICE	0	0	1	1	1	1	1	3	0	0	1	1	1	1	0	12
19	RCA	0	0	1	0	1	1	1	0	1	1	0	1	1	1	1	10
20	OFFICE	0	1	1	1	1	1	1	4	1	1	1	1	0	1	1	16
21	RCA	1	0	1	1	1	-1	1	5	1	1	0	1	1	1	1	15
22		1	1	1	0	1	-2	1	0	1	1	0	1	1	1	1	9
23		0	1	1	1	1	-2	1	4	1	1	0	1	0	1	1	12
24	HOUSE	2	1	0	0	0	1	1	3	1	1	1	1	0	1	0	13
25	HOUSE	2	0	1	1	1	1	1	2	1	1	1	0	1	1	1	15
26		1	0	1	1	1	1	1	3	1	1	1	1	0	1	1	15
27	KITCHEN	0	0	0	1	1	1	1	3	0	1	1	1	1	1	1	13
28	NO TEST																
29		0	0	1	1	1	1	1	4	1	1	1	1	1	1	1	16
30		0	1	0	1	0	1	1	3	1	1	1	1	1	0	1	13
MEAN																	14.72
SD																	2.78
MEDIAN																	15.00

Total possible points: 22.
Participants: 29 (test #28 not completed).
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
Score range: 9-20   Mean: 14.72   SD=2.78   Median=15.00

Table 179. Facility 3: Follow up post-test raw scores and descriptive statistics

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
	TEST	3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1A	RCA	3	0	1	0	1	-1	1	4	1	1	1	0	1	1	1	15
1B	RCA	2	0	1	0	1	-2	1	2	1	1	1	1	1	1	1	12
2B	RCA	0	0	1	0	1	-2	1	3	1	0	1	1	1	1	1	10
A3	ACT	2	0	1	1	0	1	1	5	0	1	1	1	1	1	1	17
A6	OFFICE	0	0	1	1	0	1	1	4	1	0	1	0	1	1	0	12
6	RCA	2	0	1	1	1	0	0	4	1	1	1	1	1	1	1	16
B6	HOUSE	1	0	1	0	0	1	1	4	1	1	1	0	0	1	1	13
A7	RCA	2	0	0	1	0	1	1	3	1	1	1	0	0	1	1	13
A8	MAIN	-1	1	1	1	1	-3	1	6	1	1	1	1	1	1	1	14
A9	MAIN	1	0	1	0	1	-1	1	4	1	1	1	0	1	1	1	13
B9	NRSG	0	0	1	0	0	1	1	6	1	0	1	0	1	1	1	14
13	NRSG	2	1	1	0	1	-2	1	6	1	1	1	1	1	1	1	17
A14	NRSG	-3	1	1	0	1	-2	1	6	1	1	1	1	1	1	1	12
15	NRSG	0	0	1	0	1	-1	1	6	1	1	1	1	1	1	1	15
16	OFFICE	2	1	1	1	1	0	1	3	1	1	1	1	1	1	1	17
17	RCA	3	0	1	0	1	0	1	5	1	1	1	0	1	1	1	17
19	RCA	1	0	1	1	1	-2	1	3	1	0	1	0	1	1	1	11
20	NRSG	1	1	1	1	1	1	1	5	1	1	1	0	1	1	1	18
		-1	0	1	0	1	-1	1	0	1	1	1	0	1	1	1	7
		-1	0	1	1	0	1	1	0	0	0	0	0	0	1	1	5
B3/24	HOUSE	0	0	1	0	1	-1	1	3	1	1	1	0	1	1	1	11
B5/25	HOUSE	1	0	1	1	1	-1	1	2	1	1	1	1	0	1	1	12
		2	0	0	1	1	1	1	4	1	1	1	1	1	1	1	17
		3	1	1	0	1	1	1	5	1	1	1	1	1	1	1	20
MEAN																	13.67
SD																	3.51
MEDIAN																	13.50

Total points possible: 22.

Participants: 24.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.
Total score range: 5-20 points.
Mean: 13.67 points.
SD: 3.51 points.
Median: 13.50 points.

Table 180. Facility 3: Comparison of descriptive statistics for each test administration

	PRE-TEST	IMMED. POST-TEST	FOLLOW UP POST-TEST
NUMBER COMPLETED TESTS	27	29	24
RANGE	5-19 points	9-20 points	5-20 points
MEAN	10.26	14.72	13.67
SD	2.23	2.78	3.51
MEDIAN	10	15	13.5

Table 181. Facility 3: Analyses by IBM SPSS® Statistics 22, full, non-matched samples of each administration

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	27	5	14	10.26	2.229
POST	29	9	20	14.72	2.776
FOLLOW	24	5	20	13.67	3.510
Valid N (listwise)	24				

Friedman Test

Ranks

	Mean Rank
PRE	1.35
POST	2.48
FOLLOW	2.17

Test Statistics[a]

N	24
Chi-Square	17.267
df	2
Asymp. Sig.	.000

a. Friedman Test

Utilizing the full sample sets from each test administration, the difference among the samples is statistically significant. Further analysis is necessary to identify where the significance lies.

Table 182. Facility 3: Comparison of pre-test and immediate post-test, full samples

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	27	5	14	10.26	2.229
POST	29	9	20	14.72	2.776
Valid N (listwise)	27				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST - PRE	Negative Ranks	2[a]	2.50	5.00
	Positive Ranks	23[b]	13.91	320.00
	Ties	2[c]		
	Total	27		

a. POST < PRE

b. POST > PRE

c. POST = PRE

Test Statistics[a]

	POST - PRE
Z	-4.252[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Utilizing the full samples for comparison, the difference between the pre-test scores and the post-test scores is statistically significant, as found previous samples.

Table 183. Facility 3: Comparison between pre-test and follow up post-test scores from full sample

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	27	5	14	10.26	2.229
FOLLOW	24	5	20	13.67	3.510
Valid N (listwise)	24				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - PRE	Negative Ranks	4[a]	5.25	21.00
	Positive Ranks	17[b]	12.35	210.00
	Ties	3[c]		
	Total	24		

a. FOLLOW < PRE

b. FOLLOW > PRE

c. FOLLOW = PRE

Test Statistics[a]

	FOLLOW - PRE
Z	-3.294[b]
Asymp. Sig. (2-tailed)	.001

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The difference between the scores of all the participants who took the pre-test compared to those who took the follow up post-test is statistically significant. This indicates that the changes in scores were likely due to the educational program.

Table 184. Facility 3: Comparison of the scores from the full sample who took the immediate post-test compared the scores of the participants from the follow up post-tests

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POST	29	9	20	14.72	2.776
FOLLOW	24	5	20	13.67	3.510
Valid N (listwise)	24				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - POST	Negative Ranks	14[a]	12.29	172.00
	Positive Ranks	9[b]	11.56	104.00
	Ties	1[c]		
	Total	24		

a. FOLLOW < POST

b. FOLLOW > POST

c. FOLLOW = POST

Test Statistics[a]

	FOLLOW - POST
Z	-1.036[b]
Asymp. Sig. (2-tailed)	.300

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

The lowest score on the immediate post-test was 9 compared to the lowest score on the follow up test of 5. The mean of the follow up test is also lower than the mean of the immediate post-test. Both of these indicate that a loss of knowledge has occurred, but the difference is not statistically significant. These analyses, along with those of the pre-test comparisons, indicate that knowledge was acquired through the educational program, with a significant change in the pre-test scores compared to immediate post-test test scores, and that learning had occurred, as evident by the still-statistically significant change in the pre-test compared to the follow up post-test scores, despite a rather small, statistically insignificant decrease from immediate post-test scores to the follow up post-test scores.

Table 185. Facility 3: Follow up evaluation, descriptive statistics

FORM	#1	#2	#3	#4	#5	COMMENTS
1	5	5	5	5	5	
2	5	5	5	5	5	
3	5	5	5	5	5	
4	5	5	5	5	5	
5	5	5	5	5	5	
6	5	5	5	5	5	
7	4	4	4	4	4	
8	4	4	4	4	4	
9	4	4	4	4	4	
10	4	4	4	4	4	
11	4	4	4	4	4	
12	3	3	3	3	3	
13	5	5	4	4	5	
14	3	4	5	4	5	
15	5	4	2	2	5	wrote n/a for #3,4
16	5	5	4	4	3	
17	4	4	3	3	4	
18	5	5	5	5	5	
19	3	3	4	4	3	
20	4	4	2	3	4	
21	4	5	5	5	5	
22	5	5	4	5	5	
23	4	4	4	4	4	
24	4	4	3	4	4	
MEAN	4.33	4.38	4.08	4.17	4.38	
SD	0.70	0.65	0.93	0.82	0.71	
MEDIAN	4.00	4.00	4.00	4.00	4.50	

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2----------------3----------------4----------------5

1.) This program was easy to understand. *Range: 3-5; mean: 4.33; SD: 0.70; median: 4.*

2.) This program increased my understanding of the topic. *Range: 3-5;mean: 4.38;SD: 0.65;median: 4.*

3.) I have used this information in my day-to-day work. *Range: 2-5; mean: 4.08; SD: 0.93; median: 4.*

4.) This information has helped me care for the residents better. *Range: 2-5;mean: 4.17; SD: 0.82; median: 4.*

5.) I would recommend this program to be used in the future. *Range: 3-5;mean: 4.38;SD: 0.71; median: 4.50.*

Total program: Range 2-5; mean: 4.27; SD: 0.76; median: 4.0.

D.6.4   Facility 4 – Comparative statistics for pre-test, immediate post-test, and follow up post-test, and related data

This section contains the raw data from Facility 4 for the one-month follow up. This includes a description of the participants who completed the follow up test, as well as descriptive statistics for performance on the follow up post-test compared to both the pre-test and the initial post-test. Lastly, the feedback from those who participated in the follow up testing is included. The Likert scale is very similar to the original, however changed slightly to reflect the passage of time and the potential influence of the program since its presentation

Facility 4 is part of a larger company operating numerous senior communities. This particular facility has independent living, a personal care home section, and a skilled nursing facility. The presentation included only the PCH staff. The presentation was given once in the afternoon to capture the departing 7-3 shift and arriving 3-11 shift. The program was mandatory for all participants. Resident care aides and nurses attended. The presentation was given on December 23, 2013, with the follow up tests and other data being completed primarily on January 29 and 30, 2014, with at least one participant completing on February 14, 2014.

Table 186. Facility 4: Descriptive information for participants who completed the follow up post-test

JOB	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
RCA	F	46	AA	23	0.5
RN	F	39	CAUC	22	5
RCA	F	PTNA	CAUC	20	15
LPN	F	31	CAUC	2.75	2.75
RCA	F	33	CAUC	9	7
RCA	F	22	CAUC	3	3
RCA	PTNA				
RCA	F	25	AA	8	5

RCA=Resident Care Aide   LPN=Licensed Practical Nurse
RN=Registered Nurse   PTNA=Prefer Not To Answer
CAUC=Caucasian   AA=African-American

Table 187. Facility 4: Comparison of matched sample pre-test, immediate post-test and follow up post-test, includes only participants who completed all three tests

FORM	JOB	PRE-TEST	% RIGHT	POST-TEST	% RIGHT	RAW CHG	% CHANGE	FOLLOW UP	% RIGHT	RAW CHG PRE	% CHG PRE	RAW CHG POST	% CHG POST
1	NRSG	15	68.18	18	81.82	3	13.64	16	72.73	1	4.55	-2	-9.09
5	RCA	15	68.18	16	72.73	1	4.55	14	63.64	-1	-4.55	-2	-9.09
7	LPN	9	40.91	15	68.18	6	27.27	11	50.00	2	9.09	-4	-18.18
9	RCA	15	68.18	15	68.18	0	0.00	7	31.82	-6	-27.27	-6	-27.27
10	RCA	11	50.00	15	68.18	4	18.18	15	68.18	4	18.18	4	18.18
MEAN		13.00	59.09	15.80	71.82	2.80	12.73	12.60	57.27	0.00	0.00	-2.00	-9.09
SD		2.83	12.86	1.30	5.93	2.39	10.85	3.65	16.58	3.81	17.31	3.74	17.01
MEDIAN		15.00	68.18	15.00	68.18	3.00	13.64	14.00	63.64	1.00	4.55	-2.00	-9.09

TOTAL POINTS POSSIBLE: 22.

Table 188. Facility 4: Comparative analyses of pre-test, immediate post-test and follow up post-test from sample of participants completing all three administrations of tests, IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	5	9	15	13.00	2.828
POST	5	15	18	15.80	1.304
FOLLOW UP	5	7	16	12.60	3.647
Valid N (listwise)	5				

Friedman Test

Ranks

	Mean Rank
PRE	1.50
POST	2.80
FOLLOW UP	1.70

Test Statistics[a]

N	5
Chi-Square	5.444
df	2
Asymp. Sig.	.066

a. Friedman Test

The differences among the test scores approaches, however do not achieve significance. The *n* of five is very small, and thus may be too small to find a difference. Further analysis of this sample may yield additional information, therefore each step will be analyzed individually, although the small n will continue to limit the information from this particular example.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	5	9	15	13.00	2.828
POST	5	15	18	15.80	1.304
Valid N (listwise)	5				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST - PRE	Negative Ranks	0[a]	.00	.00
	Positive Ranks	4[b]	2.50	10.00
	Ties	1[c]		
	Total	5		

a. POST < PRE

b. POST > PRE

c. POST = PRE

Test Statistics[a]

	POST - PRE
Z	-1.826[b]
Asymp. Sig. (2-tailed)	.068

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

A difference exists between the ranges of the scores of the pre-test and immediate post-test, as well as the means, indicating an improvement in performance on the test. The difference between the pre-test and immediate post-test from this sample demonstrates a change in scores, but that change only approaches significance.

Table 190. Facility 4: Comparison of pre-test and follow up post-test, utilizing IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	5	9	15	13.00	2.828
FOLLOW UP	5	7	16	12.60	3.647
Valid N (listwise)	5				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW UP - PRE	Negative Ranks	2[a]	3.25	6.50
	Positive Ranks	3[b]	2.83	8.50
	Ties	0[c]		
	Total	5		

a. FOLLOW UP < PRE

b. FOLLOW UP > PRE

c. FOLLOW UP = PRE

Test Statistics[a]

	FOLLOW UP - PRE
Z	-.271[b]
Asymp. Sig. (2-tailed)	.786

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

With this small *n*, the change in scores between the pre-test and the follow up post-test do not even approach significance – any change is as likely due to chance as any other cause.

Table 191. Facility 4: Comparison of immediate post-test and follow up post-test scores

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POST	5	15	18	15.80	1.304
FOLLOW UP	5	7	16	12.60	3.647
Valid N (listwise)	5				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW UP - POST	Negative Ranks	4[a]	2.50	10.00
	Positive Ranks	0[b]	.00	.00
	Ties	1[c]		
	Total	5		

a. FOLLOW UP < POST

b. FOLLOW UP > POST

c. FOLLOW UP = POST

Test Statistics[a]

	FOLLOW UP - POST
Z	-1.841[b]
Asymp. Sig. (2-tailed)	.066

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Consistent with the other statistical analyses on this small sample, the difference between the immediate post-test and follow up post-test is statistically insignificant. This *n* is likely too small from which to draw any conclusions.

Table 192. Facility 4: Statistical analyses including all data from all participants from pre-test, immediate post-test and follow up post-test

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	11	8	19	13.09	3.390
POST	15	7	19	15.47	2.696
FOLLOW	7	7	16	13.29	3.200
Valid N (listwise)	7				

Friedman Test

Ranks

	Mean Rank
PRE	1.71
POST	2.64
FOLLOW	1.64

Test Statistics[a]

N	7
Chi-Square	5.083
df	2
Asymp. Sig.	.079

a. Friedman Test

Statistical analyses comparing the three test administrations reveal that the mean from the pre-test to the immediate post-test increased, however the mean follow up post-test was only slightly higher than the pre-test. The difference among the three tests, however, is not statistically significant. The n is quite small, especially for the follow up post-test, which limits the information obtainable from this sample. Individual differences will be analyzed as well, for thoroughness.

Table 193. Facility 4: Comparison of pre-test and immediate post-test using non-parametric statistical analyses

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	11	8	19	13.09	3.390
POST	15	7	19	15.47	2.696
Valid N (listwise)	11				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST - PRE	Negative Ranks	2[a]	3.50	7.00
	Positive Ranks	7[b]	5.43	38.00
	Ties	2[c]		
	Total	11		

a. POST < PRE

b. POST > PRE

c. POST = PRE

Test Statistics[a]

	POST - PRE
Z	-1.841[b]
Asymp. Sig. (2-tailed)	.066

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

In considering only the pre-test scores and the immediate post-test scores, a difference is noted in the mean, however this difference only approaches the set significance level of 0.05, but at 0.066 falls short of being statistically significant.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	11	8	19	13.09	3.390
FOLLOW	7	7	16	13.29	3.200
Valid N (listwise)	7				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - PRE	Negative Ranks	3[a]	2.83	8.50
	Positive Ranks	3[b]	4.17	12.50
	Ties	1[c]		
	Total	7		

a. FOLLOW < PRE

b. FOLLOW > PRE

c. FOLLOW = PRE

Test Statistics[a]

	FOLLOW - PRE
Z	-.425[b]
Asymp. Sig. (2-tailed)	.671

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

With this sample, there is very little difference between the scores of the two groups of tests. The *n* of both groups is small, especially the follow up group.

Table 195. Facility 4: Comparison of immediate post-test and follow up post-test scores, utilizing IBM SPSS® Statistics 22, to analyze for statistically significant changes

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POST	15	7	19	15.47	2.696
FOLLOW	7	7	16	13.29	3.200
Valid N (listwise)	7				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - POST	Negative Ranks	5[a]	3.00	15.00
	Positive Ranks	0[b]	.00	.00
	Ties	2[c]		
	Total	7		

a. FOLLOW < POST

b. FOLLOW > POST

c. FOLLOW = POST

Test Statistics[a]

	FOLLOW - POST
Z	-2.041[b]
Asymp. Sig. (2-tailed)	.041

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

There was a decline in the scores from the immediate post-test to the follow up post-test, as indicated by both the ranges and the means. Although small, according to the WSRT, this difference does meet statistical significance. These results are likely confounded by the small *n*, especially in the follow up post-test, as a similar but non-significant change was noted in the pre-test and immediate post-test. The n was very similar between the pre-test and immediate post-test group, however the n of the follow up post-test group was only about one half the size of the immediate post-test group.

Table 196. Facility 4: Program evaluation performed at follow up

	#1	#2	#3	#4	#5	COMMENTS
	5	5	5	5	5	
	5	5	5	5	5	
	3	3	3	3	3	
	5	4	4	4	4	
	4	4	4	3	4	
	4	3	3	4	4	
	5	5	4	5	4	
MEAN	4.43	4.14	4.00	4.14	4.14	
SD	0.79	0.90	0.82	0.90	0.69	
MEDIAN	5.00	4.00	4.00	4.00	4.00	

STRONGLY DISAGREE   STRONGLY AGREE

0--------------1----------------2----------------3----------------4----------------5

1.) This program was easy to understand. *Range 3-5; mean 4.43; SD 0.79; median 5.*

2.) This program increased my understanding of the topic. *Range 3-5; mean 4.14; SD 0.90; median 4.*

3.) I have used this information in my day-to-day work. *Range 3-5; mean 4; SD 0.82; median 4.*

4.) This information has helped me care for the residents better. *Range 3-5; mean 4.14; SD 0.9; median 4.*

5.) I would recommend this program to be used in the future. *Range 3-5; mean 4.14; SD .69; median 4.*

TOTAL PROGRAM EVALUATION: Range 3-5; mean 4.17; SD 0.79; median 4.

D.6.5 Facility 5 -- Comparative statistics for pre-test, immediate post-test, and follow up post-test, and related data

This section contains the raw data from Facility 5 for the one-month follow up. This includes a description of the participants who completed the follow up test, as well as descriptive statistics for performance on the follow up post-test compared to both the pre-test and the initial post-test. Lastly, the feedback from those who participated in the follow up testing is included. The Likert scale is very similar to the original, however changed slightly to reflect the passage of time and the potential influence of the program since its presentation.

To review, Facility 5 is part of a larger company operating numerous senior communities. This particular facility has independent living, a personal care home section, and a skilled nursing facility. The presentation included only the PCH staff. The presentation was given four times over two separate days, twice in the morning to capture the departing 11-7 shifts, and twice in the afternoon to capture the departing 7-3 shift and arriving 3-11 shift. The program was mandatory for all participants. Resident care aides, nurses and some individuals from administration attended. The initial presentation was given on December 4, 2013 and December 10, 2013. The follow up data was completed from March 11, 2014 to approximately March 17, 2014. There was a delay due to the administrator being hospitalized, and those who were assuming her duties were busy, thus unable to complete sooner. Because of the absence of the administrator, the sign in sheets over the four initial presentations were unavailable. Thus, the staff had no access to their assigned numbers. As a result, there is no way to match individual test results to identify individual changes in scores. The data were thus analyzed as a group for the pre-test, the immediate post-test and the follow up post-test results.

Table 197. Facility 5: Descriptive information for the participants in the follow up data collection

	JOB	GENDER	AGE	RACE	YRS W OA	YRS IN ALF PCH
	RN	F	43	ASIAN	4	3.5
	RN	F	70	CAUC	30	1
	RN	F	PNTA	CAUC	3	3
	RN	F	25	CAUC	1.5	1.5
	RN	M	24	CAUC	1	1
	LPN	F	53	CAUC	10	5
		F		CAUC	15	
	RCA	F	39	CAUC	11	3
	RCA	F	19	CAUC	1	1
	RCA	F	49	HISP	18	3.5
	RCA	F	25	CAUC	1	1
	RCA	F	47	CAUC	13	3.5
	RCA	F	66	CAUC	14	8
	RCA	F	PNTA	PNTA	21	8
	RCA	F	PNTA	CAUC	35	15
	RCA	F	36	CAUC	3	3
	RCA	F	PNTA	CAUC	5	5
	RCA	F	PNTA	PNTA	15	15
	RCA	F	22	CAUC	0.5	0.5
	RCA	F	25	CAUC	3	3
	RCA	F	PNTA	PNTA	15	7
	RCA	F	61		13.5	3
	RCA	F	PNTA	CAUC	13	3
	RCA					
MEAN			40.27		10.72	4.43
SD			16.98		9.38	4.04
MEDIAN			39.00		11.00	3.00

RCA=Resident Care Aide   LPN=Licensed Practical Nurse
PNTA=Prefer Not To Answer   CAUC=Caucasian
HISP=Hispanic   ASIAN=Asian

Table 198. Facility 5: Pre-test raw data, all sessions combined

FORM	JOB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL	SESSION
	TEST	1	1	3	1	1	6	1	1	1	1	1	1	1	1	1	22	A
1	RCA	0	1	2	0	0	3	1	-1	1	1	0	1	0	1	1	11	A
2	RCA	0	1	0	1	0	5	1	1	1	0	1	0	1	1	0	13	A
3	RCA	0	1	0	1	0	6	1	1	1	1	1	1	1	1	1	17	A
4	RCA	0	1	1	1	0	4	1	1	1	1	1	1	1	1	0	15	A
5	RCA	0	1	-1	1	1	2	1	-1	1	1	1	0	1	1	1	10	A
6	RCA	0	0	1	1	1	3	0	1	1	1	1	0	1	1	1	13	A
7	RN	0	0	-1	1	0	3	0	1	1	1	0	1	0	1	1	9	A
1		0	1	1	0	1	3	1	1	1	1	1	1	1	1	1	15	B
2		0	0	0	1	0	3	0	1	1	1	0	0	1	1	0	9	B
3	RCA	0	0	0	1	0	1	1	1	0	1	1	0	1	0	1	8	B
4	RCA	0	0	0	1	1	2	1	1	1	0	1	0	0	1	1	10	B
5	OFFICE	1	1	0	1	0	5	1	-1	1	0	1	0	1	1	1	13	B
6		1	1	-1	1	0	4	1	1	1	1	1	1	1	1	1	15	B
1	RCA	1	0	-1	1	0	4	0	1	1	1	1	0	1	1	0	11	C
2	RCA	0	0	-1	1	0	3	1	1	1	1	0	0	0	1	1	9	C
3	RCA	0	0	-1	0	0	2	1	1	1	1	1	0	1	1	1	9	C
4	RCA	0	0	-1	1	1	1	0	1	0	0	0	0	1	1	0	5	C
5	RN	0	1	2	1	1	5	0	1	1	1	1	0	1	1	0	16	C
6	RCA	0	0	0	1	0	3	0	1	0	0	0	0	1	1	1	8	C
1	RCA	1	0	0	1	1	2	1	1	0	1	1	0	1	1	1	12	D
2	RCA	1	0	-3	1	0	3	1	1	0	0	0	1	1	1	0	7	D
3		1	0	1	1	1	3	1	1	1	1	1	0	1	1	1	15	D
4		1	0	1	1	1	2	1	1	1	0	1	0	0	1	0	11	D
5		1	0	0	1	1	2	1	1	1	1	1	0	0	1	0	11	D
6	RCA	1	0	1	0	0	1	0	1	1	1	1	1	0	1	0	9	D
7	RCA	0	1	-2	1	1	4	1	1	1	0	1	0	1	1	1	12	D
8		1	0	0	0	0	6	0	1	1	1	0	0	1	1	1	13	D
9	RCA	1	0	-1	1	0	3	1	1	1	1	1	0	1	1	0	11	D
10		1		-1	1	0	2	1	-1	1	0	1	1	1	1	1	9	D
11	RCA	1	0	1	1	0	4	1	-1	1	1	1	1	1	1	1	14	D
12	RCA	1	0	1	1	0	1	1	1	1	0	0	1	1	1	0	10	D
13	RCA	CAME	LATE	NO	PRETEST	DATA	MAYHV	MISSED	PART	OF	PRES	ENTA	TION					D
14		CAME	LATE	NO	PRETEST	DATA	MAYHV	MISSED	PART	OF	PRES	ENTA	TION					D

TOTAL POINTS POSSIBLE: 22.
TEST = the number of points possible for each question.
Numbers across the top indicates question number; numbers in each block indicate points received by participant for that question.

Table 199. Facility 5: Immediate post-test raw data, all sessions combined

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
	TEST	3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1	RCA	2	0	1	1	1	1	1	2	1	1	1	1	0	1	1	15
2	RCA	-2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	13
3	RCA	2	0	1	1	1	1	1	5	1	1	1	1	1	1	1	19
4	RCA	-1	0	1	1	1	1	1	4	1	1	1	1	0	1	1	14
5	RCA	1	1	1	0	1	1	1	2	1	1	1	1	0	0	1	13
6	RCA	1	1	1	0	1	1	0	4	1	1	1	1	1	1	1	16
7	RN	1	0	1	1	1	1	1	4	1	1	1	1	1	1	1	17
1		1	0	0	1	1	1	1	3	1	1	1	1	1	1	1	15
2		1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17
3	RCA	1	0	1	0	1	1	1	1	1	1	1	1	0	1	1	12
4	RCA	1	0	1	1	1	1	1	3	1	1	1	1	0	1	1	15
5	OFFICE	1	0	1	1	1	-2	1	3	1	1	1	1	1	1	1	13
6		-1	0	1	1	1	-1	1	5	1	1	1	1	1	1	1	14
1	RCA	-1	0	1	1	1	1	1	4	1	1	1	1	0	1	1	14
2	RCA	0	0	1	0	1	-1	1	4	1	1	1	1	1	1	1	13
3	RCA	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	18
4	RCA	-1	1	1	0	1	1	0	2	1	0	0	1	1	1	1	10
5	RN	3	0	1	1	1	1	0	4	1	1	1	1	1	1	1	18
6	RCA	0	0	1	1	1	1	1	2	1	1	1	1	1	1	1	14
1	RCA	3	0	1	1	1	0	1	3	1	1	1	1	1	1	1	17
2	RCA	0	1	1	1	1	-2	4	1	1	1	1	1	1	1	1	14
3		1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17
4		1	0	1	1	1	-1	0	3	1	0	1	1	0	1	1	11
5	LEFT B4	1	1	1	0	1	1	1	2	1	1	1	1	0	0	0	12
6	RCA	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	13
7	RCA	2	0	1	1	1	1	1	4	1	1	1	1	1	1	1	18
8		2	1	1	1	1	1	1	3	1	1	1	1	1	1	1	18
9	RCA	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17
10		1	0	0	1	0	1	1	3	1	1	1	1	1	1	1	14
11	RCA	1	0	1	1	1	-1	1	4	1	1	1	1	1	1	1	15
12	RCA	3	0	1	1	1	-3	1	4	1	1	1	1	1	1	1	15
13	RCA	2	0	0	1	1	1	1	1	1	1	1	1	0	1	1	13
14	no pre	1	1	1	0	0	1	1	2	1	1	1	1	1	1	1	14

"TEST" indicates the number of points possible for each question.

Numbers across the top indicate question number; numbers in each block indicate points received by participant for that question. Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 200. Facility 5: Follow up post-test raw data

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL
		3	1	1	1	1	1	1	6	1	1	1	1	1	1	1	22
1	RN	1	0	1	1	1	1	1	3	1	1	1	1	1	1	1	16
2	RCA	2	1	1	1	1	1	0	3	1	1	1	1	1	1	1	17
3	RN	1	0	1	0	0	0	0	2	1	1	1	0	1	1	1	10
4	RN	2	1	1	1	1	0	0	3	1	1	1	1	1	1	1	16
5	RN	0	0	1	0	1	1	1	4	1	1	1	1	1	1	1	15
6	RN	1	0	1	1	1	-2	1	4	1	1	1	0	1	1	1	13
7	RN	2	0	1	1	1	0	1	3	1	1	1	1	1	1	0	15
8	LPN	1	0	1	0	1	1	0	1	1	0	1	0	1	1	1	10
9	RCA	1	0	1	1	1	-3	1	5	1	1	1	1	1	1	1	14
10	RCA	1	0	1	0	1	-2	1	3	1	1	1	1	1	1	1	12
11	RCA	0	1	1	1	1	1	1	5	1	1	1	1	0	1	0	16
12	RCA	0	1	1	0	1	-1	0	3	1	0	1	1	1	1	0	10
13	RCA	-1	1	1	0	0	1	1	4	0	1	1	1	1	1	0	12
14	RCA	1	0	1	1	1	1	0	2	1	0	1	1	1	1	0	12
15	RCA	2	0	0	0	1	0	1	0	1	1	1	1	1	1	0	10
16	RCA	1	1	1	1	0	1	1	4	1	0	1	1	1	1	1	16
17	RCA	1	1	1	1	1	-1	1	2	1	0	1	1	0	1	1	12
18	RCA	2	1	1	1	1	0	0	3	1	1	1	0	1	1	1	15
19	RCA	2	1	1	1	1	-1	0	4	1	1	1	0	1	1	1	15
20	RCA	-1	0	1	0	1	-1	1	4	1	1	1	1	1	1	0	11
21	RCA	-1	0	1	1	1	1	1	5	1	1	1	1	0	1	0	14
22	RCA	2	1	1	1	1	0	1	4	1	0	1	1	1	0	1	16
23	RCA	0	1	1	1	1	1	1	5	1	1	1	1	1	1	1	18
24	RCA	0	1	1	1	1	1	1	5	1	1	1	1	1	1	1	18
25	RCA	2	1	1	0	1	-1	0	3	1	1	1	1	1	1	1	14

TOTAL POINTS POSSIBLE: 22

"TEST" indicates the number of points possible for each question.
Numbers across the top indicate question number; numbers in each block indicate points received by participant for that question.
Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 201. Facility 5: Comparison of pre-test, immediate post-test and follow up post-test scores, utilizing IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	30	5	17	11.30	2.914
POST-TEST	30	10	19	14.97	2.266
FOLLOW UP	26	10	22	14.19	2.953
Valid N (listwise)	26				

Friedman Test

Ranks

	Mean Rank
PRE-TEST	1.35
POST-TEST	2.46
FOLLOW UP	2.19

Test Statistics[a]

N	26
Chi-Square	19.284
df	2
Asymp. Sig.	.000

a. Friedman Test

These analyses indicate that a statistical difference among the different administrations of the test, with post-test scores increasing compared to pre-test scores at a significance level of 0.000. Statistically, a significance value of 0.05 could be considered to be due to circumstances other than chance, in this case, likely the educational program presented to the staff. Further analyses among the different administrations of this test provide more detailed information about these differences.

414

Table 202. Facility 5: Comparison of pre-test and immediate post-test scores, utilizing IBM SPSS®
Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	30	5	17	11.30	2.914
POST-TEST	30	10	19	14.97	2.266
Valid N (listwise)	30				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST-TEST - PRE-TEST	Negative Ranks	2[a]	2.00	4.00
	Positive Ranks	24[b]	14.46	347.00
	Ties	4[c]		
	Total	30		

a. POST-TEST < PRE-TEST

b. POST-TEST > PRE-TEST

c. POST-TEST = PRE-TEST

Test Statistics[a]

	POST-TEST - PRE-TEST
Z	-4.367[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Utilizing these data, the difference between the pre-test and the immediate post-test scores is statistically significant at 0.000 (compared to the 0.05 level established to meet statistical significance). This is a strong indication that the difference between the test scores was not due to chance, but rather, very likely due to the educational program presented.

Table 203. Facility 5: Comparison of pre-test and follow up post-test scores, utilizing IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE-TEST	30	5	17	11.30	2.914
FOLLOW UP	26	10	22	14.19	2.953
Valid N (listwise)	26				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW UP - PRE-TEST	Negative Ranks	4[a]	12.00	48.00
	Positive Ranks	20[b]	12.60	252.00
	Ties	2[c]		
	Total	26		

a. FOLLOW UP < PRE-TEST

b. FOLLOW UP > PRE-TEST

c. FOLLOW UP = PRE-TEST

Test Statistics[a]

	FOLLOW UP - PRE-TEST
Z	-2.921[b]
Asymp. Sig. (2-tailed)	.003

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The difference between the pre-test and the follow up post-test is statistically significant, indicating that the participants learned, i.e., retained the information over time, that was presented during the educational program. There is a slight decrease in the mean of the follow up test, compared to the immediate post-test, as well as a slight decrease in the significance value, indicating a slight decrease in the follow up test scores, a lack of retention of some information. Nonetheless, the participants have clearly shown improvement from the pre-test to the follow up post-test.

Table 204. Facility 5: Comparison of immediate post-test and follow up post-test scores, utilizing IBM SPSS® Statistics 22

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POST-TEST	30	10	19	14.97	2.266
FOLLOW UP	26	10	22	14.19	2.953
Valid N (listwise)	26				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW UP - POST-TEST	Negative Ranks	15[a]	12.07	181.00
	Positive Ranks	9[b]	13.22	119.00
	Ties	2[c]		
	Total	26		

a. FOLLOW UP < POST-TEST

b. FOLLOW UP > POST-TEST

c. FOLLOW UP = POST-TEST

Test Statistics[a]

	FOLLOW UP - POST-TEST
Z	-.889[b]
Asymp. Sig. (2-tailed)	.374

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

There is a slight decrease in the follow up test score when compared to the immediate post-test score, however, it is not statistically significant. This further supports the above evidence that the participants retained most of the information from the educational program, in that there is little degradation of performance between the two tests, despite, in this case, the passage of nearly three months.

Table 205. Facility 5: Follow up program evaluation, descriptive statistics

	#1	#2	#3	#4	#5
	5	5	5	5	5
	5	5	5	5	5
	5	5	5	5	5
	5	5	5	5	5
	5	5	5	5	5
	4	4	4	4	4
	4	4	4	4	4
	4	4	4	4	4
	4	4	4	4	4
	4	4	4	4	4
	4	4	4	4	4
	4	4	4	4	4
	5	4	5	5	4
	4	3	4	3	4
	4	4	4	4	2
	4	5	5	5	5
	3	3	4	4	3
	3	3	1	1	2
	3	3	4	2	2
	5	4	5	4	5
	3	4	3	3	3
	3	4	3	3	3
	4	4	5	4	4
MEAN	4.09	4.09	4.17	3.96	3.91
SD	0.73	0.67	0.94	1.02	1.00
MEDIAN	4.00	4.00	4.00	4.00	4.00

Evaluation questions corresponding with raw data scores:
Please evaluate the program just provided by answering the below questions on a scale o 0 to 5, with 0 being you strongly disagree, and 5 being you strongly agree.

STRONGLY DISAGREE   STRONGLY AGREE
0--------------1---------------2---------------3---------------4---------------5
1.) This program was easy to understand. *Range 3-5; mean 4.09; SD 0.73; median 4.*
2.) This program increased my understanding of the topic. *Range 3-5; mean 4.09; SD 0.67; median 4.*
3.) I have used this information in my day-to-day work. *Range 1-5; mean 4.19; SD 0.94; median 4.*
4.) This information has helped me care for the residents better. *Range 1-5; mean 3.96; SD 1.02; median 4.*
5.) I would recommend this program to be used in the future. *Range 2-5; mean 3.91; SD 1.0; median 4.*

TOTAL PROGRAM EVALUATION: Range 1-5; mean 4.04; SD 0.87; median 4.

D.7   EDUCATIONAL PROGRAM – FOLLOW UP DATA

This section contains the raw data and statistical analyses from Facilities 1-5. Facility 6 will not be included, as the administrator at that facility did not respond to follow up. The categories will be, as best as possible, divided into RCAs, LPN/RNs, NRSG (participants who identified themselves as part of the nursing department, but did not specify role; based on comparison with other forms, this category contains both RCAs and LPN/RNs, however it is not possible to differentiate which is which with any level of certainty), HOUSE (housekeeping) and OTHER (maintenance, kitchen staff, servers, drivers, and others; housekeeping will be analyzed here as well).

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D.7.1   All positions -- Comparative statistics for pre-test, immediate post-test, and follow up post-test, and related data analyzed according to reported job title

In this subsection, results will be analyzed for both descriptive and comparative statistics for all job titles, as reported by participants, combined across facilities.

Table 206. Raw data for all participants across facilities, pre-test scores

FORM	JOB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL	FACILITY
3	ACT	1	0	-2	1	0	3	0	1	0	1	1	0	1	1	1	9	3
7	ACTIV	1	0	-1	1	1	3	0	1	1	1	1	0	1	1	0	11	2
7	ADMIN	0	0	1	0	0	4	1	-1	1	0	1	0	1	1	0	9	4
8	DIET	1	0	-1	1	1	1	0	1	1	1	0	0	0	1	1	8	2
8	DRIVER	1	0	-1	1	1	4	1	1	1	1	1	0	1	1	0	13	3
1	HOUSE	1	0	-1	1	1	3	0	1	1	1	1	0	1	1	1	12	1
2	HOUSE	0	0	-1	0	0	3	1	-1	0	0	1	0	1	0	0	4	1
3	HOUSE	1	0	-1	1	1	2	0	1	1	1	0	0	0	1	1	9	1
4	HOUSE	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	3	1
5	HOUSE	1	0	-1	0	0	1	1	1	0	0	1	0	1	0	0	5	1
6	HOUSE	1	0	1	1	1	4	0	1	1	1	1	0	1	1	1	15	2
12	HOUSE	1	0	0	1	1	3	0	1	1	1	1	0	1	1	1	13	2
13	HOUSE	0	0	-1	1	1	2	0	1	0	0	1	0	0	1	1	7	2
24	HOUSE	1	0	1	0	1	2	1	1	1	1	0	1	0	1	0	11	3
25	HOUSE	1	0	1	1	1	1	0	1	1	1	1	1	1	1	0	12	3
10	KITCHEN	1	0	-1	1	1	4	1	1	1	1	1	1	1	1	0	14	2
15	KITCHEN	1	1	0	0	1	3	1	1	1	0	0	1	1	1	0	12	2
27	KITCHEN	1	0	-1	0	0	2	0	1	1	1	0	1	1	1	1	9	3
6	LPN	0	0	-2	1	1	2	0	1	1	0	1	0	1	1	1	8	1
7	LPN	0	1	-1	1	0	2	0	1	1	0	1	0	1	1	1	9	1
8	LPN	1	0	-1	1	0	4	0	-1	0	1	1	0	1	1	1	9	1
5	LPN	1	0	-3	1	0	4	1	-1	1	1	1	0	1	1	1	9	3
9	MAINT	0	0	-2	0	0	4	0	1	0	1	0	0	1	1	1	7	3
11	NRSG	1	0	0	1	1	4	1	1	1	1	0	0	1	1	1	14	3
12	NRSG	1	1	0	1	0	5	0	1	0	1	0	0	1	1	0	12	3
13	NRSG	0	0	1	1	1	4	1	-1	1	1	1	0	1	1	1	13	3
14	NRSG	NA	NA	NA	NA	0	0	0	1	1	1	1	NA	NA	NA	NA	(4) of 12	3
15	NRSG	1	0	2	0	0	1	1	-1	1	1	0	0	1	1	1	9	3
29	NRSG	0	1	0	1	0	3	1	-1	1	1	0	0	1	1	1	10	3
30	NRSG	NA	NA	NA	NA	NA	NA	NA	NA	1	1	1	0	1	1	0	5 OF 7	3
1	NRSG	0	0	1	1	1	4	1	1	1	1	1	1	1	1	0	15	4
8	NRSG	1	0	3	1	1	4	1	1	1	1	1	1	1	1	1	19	4
11	NRSG	1	1	1	1	0	3	0	-1	1	1	0	0	1	1	1	11	4
12	NRSG				1	1	5	0	1	1	1	1	0	1	1	1	14	4
4	NRSG	0	0	-1	1	0	3	0	1	0	1	1	0	1	0	0	7	2
11	NRSG	0	0	1	1	0	4	1	1	1	1	1	0	1	1	1	14	2
3	OFFICE	1	0	-2	1	0	4	1	1	0	0	1	0	1	1	0	9	2
9	OFFICE	1	0	-1	1	1	3	1	1	1	1	0	0	1	1	0	11	2
6	OFFICE	1	0	0	1	0	4	1	1	1	1	1	0	0	1	0	12	3
10	OFFICE	0	0	-3	1	0	2	0	1	0	1	1	0	1	1	0	5	3

Table 206. (continued)

16	OFFICE	1	1	-1	1	1	3	0	1	0	1	0	1	1	1	0	11	3
18	OFFICE	0	0	1	1	1	4	0	1	0	0	0	1	0	1	0	10	3
20	OFFICE	1	0	0	1	1	3	1	1	1	1	1	0	0	1	1	13	3
5	OFFICE	1	1	0	1	0	5	1	-1	1	0	1	0	1	1	1	13	5
1	RCA	1	1	-2	1	1	4	1	1	1	1	1	1	0	1	0	13	1
2	RCA	0	0	0	0	1	1	1	1	0	0	1	0	0	0	1	6	1
3	RCA	0	1	-1	1	1	3	1	-1	1	1	1	0	1	1	1	11	1
9	RCA	0	0	-2	1	1	4	1	0	1	0	1	0	1	1	1	10	1
10	RCA	0	1	-1	0	0	5	1	1	1	0	1	0	1	1	1	12	1
11	RCA	1	0	-1	1	0	3	1	1	1	0	1	0	1	1	1	11	1
12	RCA	0	0	-1	1	1	5	1	-1	1	1	0	0	1	1	0	10	1
28	RCA	0	0	0	1	0	1	0	1	1	0	1	0	1	1	1	8	1
2	RCA	1	0	-1	1	1	4	1	1	1	1	1	0	1	1	0	13	2
5	RCA	1	0	0	1	0	4	1	0	-1	1	1	0	1	1	1	11	2
19	RCA	0	1	0	1	1	3	1	1	1	1	1	0	1	1	1	14	2
1	RCA	1	0	0	1	1	3	1	0	1	1	0	0	1	1	1	12	3
4	RCA	NA	NA	1	1	0	4	1	0	1	1	0	1	1	0	1	12 of 19	3
7	RCA	1	0	-1	0	0	2	1	1	1	1	1	0	0	0	0	7	3
17	RCA	1	0	-1	1	0	3	1	1	1	1	1	0	1	1	1	12	3
19	RCA	1	0	0	0	0	4	0	1	1	1	0	1	1	1	0	11	3
21	RCA	0	0	1	1	0	3	1	-1	1	1	1	0	0	1	1	10	3
2	RCA	0	0	1	1	1	4	1	1	0	1	0	0	0	1	1	12	4
3	RCA	1	0	1	1	0	4	1	-1	1	1	1	1	0	1	0	12	4
4	RCA	0	0	1	1	1	2	0	1	1	0	0	0	1	0	0	8	4
5	RCA	1	0	1	1	1	5	1	1	0	1	1	0	1	1	0	15	4
6	RCA	1	0	1	1	1	5	1	1	1	1	1	0	1	1	1	17	4
10	RCA	0	0	1	0	0	4	1	1	1	1	1	0	1	0	0	11	4
1	RCA	0	1	2	0	0	3	1	-1	1	1	0	1	0	1	1	11	5
2	RCA	0	1	0	1	0	5	1	1	1	0	1	0	1	1	0	13	5
3	RCA	0	1	0	1	0	6	1	1	1	1	1	1	1	1	1	17	5
4	RCA	0	1	1	1	0	4	1	1	1	1	1	1	1	1	0	15	5
5	RCA	0	1	-1	1	1	2	1	-1	1	1	1	0	1	1	1	10	5
6	RCA	0	0	1	1	1	3	0	1	1	1	1	0	1	1	1	13	5
3	RCA	0	0	0	1	0	1	1	1	0	1	1	0	1	0	1	8	5
4	RCA	0	0	0	1	1	2	1	1	1	0	1	0	0	1	1	10	5
1	RCA	1	0	-1	1	0	4	0	1	1	1	1	0	1	1	0	11	5
2	RCA	0	0	-1	1	0	3	1	1	1	1	0	0	0	1	1	9	5
3	RCA	0	0	-1	0	0	2	1	1	1	1	1	0	1	1	1	9	5
4	RCA	0	0	-1	1	1	1	0	1	0	0	0	0	1	1	0	5	5
6	RCA	0	0	0	1	0	3	0	1	0	0	0	0	1	1	1	8	5
1	RCA	1	0	0	1	1	2	1	1	0	1	1	0	1	1	1	12	5

Table 206. (continued)

2	RCA	1	0	-3	1	0	3	1	1	0	0	0	1	1	1	0	7	5
6	RCA	1	0	1	0	0	1	0	1	1	1	1	1	0	1	0	9	5
7	RCA	0	1	-2	1	1	4	1	1	1	0	1	0	1	1	1	12	5
9	RCA	1	0	-1	1	0	3	1	1	1	1	1	0	1	1	0	11	5
11	RCA	1	0	1	1	0	4	1	-1	1	1	1	1	1	1	1	14	5
12	RCA	1	0	1	1	0	1	1	1	1	0	0	1	1	1	0	10	5
1	RCA	1	0	-1	0	1	4	1	1	0	1	1	0	1	1	0	11	6
2	RCA	1	0	0	1	1	4	1	1	1	0	1	0	0	1	1	13	6
3	RCA	1	0	0	1	1	3	1	1	0	1	0	0	0	1	0	10	6
4	RCA	0	0	-3	0	0	0	1	-2	1	1	1	1	0	0	0	0	6
7	RN	0	0	-1	1	0	3	0	1	1	1	0	1	0	1	1	9	5
5	RN	0	1	2	1	1	5	0	1	1	1	1	0	1	1	0	16	5
14		0	0	-1	1	0	2	1	1	1	1	1	0	0	1	1	9	1
2		1	0	-1	1	1	1	0	1	1	1	1	0	0	1	1	9	3
22		1	0	-1	1	0	3	1	-1	0	1	1	0	1	1	0	8	3
23		1	0	0	1	0	4	0	-1	1	1	1	1	1	1	1	12	3
26		1	0	-1	1	0	3	0	1	1	0	1	1	1	1	0	10	3
28		1	0	-1	1	1	1	1	1	0	0	0	1	1	0	0	7	3
9		1	0	1	1	1	4	1	1	1	1	1	0	0	1	1	15	4
1		0	1	1	0	1	3	1	1	1	1	1	1	1	1	1	15	5
2		0	0	0	1	0	3	0	1	1	1	0	0	1	1	0	9	5
6		1	1	-1	1	0	4	1	1	1	1	1	1	1	1	1	15	5
3		1	0	1	1	1	3	1	1	1	1	1	0	1	1	1	15	5
4		1	0	1	1	1	2	1	1	1	0	1	0	0	1	0	11	5
5		1	0	0	1	1	2	1	1	1	1	1	0	0	1	0	11	5
8		1	0	0	0	0	6	0	1	1	1	0	0	1	1	1	13	5
10		1		-1	1	0	2	1	-1	1	0	1	1	1	1	1	9	5

Total n for pre-tests: 108.

Numbers across the top indicate question number; numbers in each block indicate points received by participant for that question.

Table 207. Raw data for all facilities, sorted by job, immediate post-test answers and scores

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	10	11	12	13	14	15	TOTAL	FACILITY
3	ACT	3	1	1	1	1	1	1	4	0	1	1	1	1	1	1	19	3
7	ACTIV	-1	1	1	0	1	1	0	2	1	1	1	1	0	1	1	11	2
7	ADMIN	1	0	1	1	1	1	1	3	1	0	1	1	1	1	1	15	4
8	DRIVER	0	1	1	0	1	1	1	3	1	1	1	1	1	1	1	15	3
1	HOUSE	1	1	1	1	1	1	1	3	1	1	0	1	1	1	1	16	1
2	HOUSE	2	0	1	0	1	-2	1	2	1	1	0	1	1	1	0	10	1
3	HOUSE	1	1	1	1	1	1	1	2	1	1	1	1	0	1	1	15	1
4	HOUSE	1	0	1	1	1	-1	1	1	1	0	1	1	0	1	0	9	1
5	HOUSE	-1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	11	1
12	HOUSE	0	1	1	0	1	1	0	1	1	1	1	1	0	1	1	11	2
13	HOUSE	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	13	2
24	HOUSE	2	1	0	0	0	1	1	3	1	1	1	1	0	1	0	13	3
25	HOUSE	2	0	1	1	1	1	1	2	1	1	1	0	1	1	1	15	3
27	KITCHEN	0	0	0	1	1	1	1	3	0	1	1	1	1	1	1	13	3
6	LPN	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17	1
7	LPN	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	13	1
8	LPN	1	1	1	0	0	-1	1	4	1	1	0	1	1	1	1	13	1
5	LPN	1	0	1	1	1	1	1	5	1	1	1	1	1	1	1	18	3
9	MAINT	0	1	1	0	0	-2	1	3	1	0	0	1	1	1	1	9	3
11	NRSG	2	0	1	1	1	1	1	4	1	1	1	1	1	1	1	18	3
12	NRSG	1	1	1	1	1	1	1	5	1	1	1	1	1	1	1	19	3
13	NRSG	2	0	1	1	1	-1	1	4	1	1	1	1	1	1	1	16	3
14	NRSG	0	0	1	1	1	1	1	2	1	1	1	1	1	1	1	14	3
15	NRSG	3	0	1	0	1	-1	1	3	1	1	1	1	1	1	1	15	3
29	NRSG	0	0	1	1	1	1	1	4	1	1	1	1	1	1	1	16	3
30	NRSG	0	1	0	1	0	1	1	3	1	1	1	1	1	0	1	13	3
1	NRSG	0	0	1	0	1	1	1	3	2	2	2	2	1	1	1	18	4
8	NRSG	2	1	1	0	1	1	1	2	1	1	1	1	0	1	1	15	4
11	NRSG	2	1	1	1	1	1	0	2	1	1	1	1	1	1	1	16	4
12	NRSG	1	0	1	1	1	1	1	5	1	1	1	1	1	1	1	18	4
4	NRSG	1	0	1	0	1	1	1	3	1	1	1	1	1	0	1	14	2
11	NRSG	1	0	1	0	0	-1	1	3	1	1	1	1	1	1	1	12	2
3	OFFICE	0	0	1	1	1	-1	1	2	1	1	1	1	1	1	1	12	2
6	OFFICE	1	1	1	1	1	1	1	3	1	1	1	1	0	1	1	16	3
10	OFFICE	1	1	1	0	1	1	1	3	1	1	1	1	1	1	1	16	3
16	OFFICE	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	14	3
18	OFFICE	0	0	1	1	1	1	1	3	0	0	1	1	1	1	0	12	3
20	OFFICE	0	1	1	1	1	1	1	4	1	1	1	1	0	1	1	16	3
5	OFFICE	1	0	1	1	1	-2	1	3	1	1	1	1	1	1	1	13	5
1	RCA	1	0	1	1	1	1	1	4	1	1	1	1	0	1	0	15	1

Table 207. (continued)

2	RCA	2	0	1	0	1	0	1	2	1	0	1	1	0	1	1	12	1
3	RCA	0	0	1	1	1	1	1	3	1	1	1	1	1	1	1	15	1
9	RCA	-1	1	1	1	1	-1	1	3	1	1	1	1	1	1	1	13	1
10	RCA	2	1	0	1	0	-1	1	4	1	1	1	1	1	0	1	14	1
11	RCA	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17	1
12	RCA	1	1	1	0	1	-1	1	5	1	1	1	1	1	1	1	16	1
28	RCA	1	1	1	0	1	-1	1	4	1	1	1	1	0	1	1	14	1
2	RCA	1	0	1	0	1	1	1	2	1	1	1	1	1	1	1	14	2
5	RCA	0	0	1	1	1	-3	1	4	1	1	1	1	1	1	1	12	2
19	RCA	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	11	2
1	RCA	2	1	1	1	1	1	1	5	1	1	1	1	1	1	1	20	3
4	RCA	2	0	1	1	0	1	1	2	1	1	1	1	1	1	1	15	3
7	RCA	1	1	1	0	1	1	1	3	1	1	1	1	1	0	0	14	3
17	RCA	2	0	1	0	1	1	1	4	1	1	1	1	1	1	1	17	3
19	RCA	0	0	1	0	1	1	1	0	1	1	0	1	1	1	1	10	3
21	RCA	1	0	1	1	1	-1	1	5	1	1	0	1	1	1	1	15	3
2	RCA	1	1	1	0	1	-1	1	4	1	1	1	1	1	1	1	15	4
3	RCA	3	1	1	1	1	-1	1	6	1	1	1	1	0	1	1	19	4
4	RCA	-1	1	1	0	1	-1	0	2	1	0	1	1	0	0	1	7	4
5	RCA	0	1	1	0	1	1	1	4	1	1	1	1	1	1	1	16	4
6	RCA	1	1	1	0	1	1	1	4	1	1	1	1	1	1	1	17	4
10	RCA	2	0	0	1	1	1	1	4	1	1	1	1	1	0	0	15	4
1	RCA	2	0	1	1	1	1	1	2	1	1	1	1	0	1	1	15	5
2	RCA	-2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	13	5
3	RCA	2	0	1	1	1	1	1	5	1	1	1	1	1	1	1	19	5
4	RCA	-1	0	1	1	1	1	1	4	1	1	1	1	0	1	1	14	5
5	RCA	1	1	1	0	1	1	1	2	1	1	1	1	0	0	1	13	5
6	RCA	1	1	1	0	1	1	0	4	1	1	1	1	1	1	1	16	5
3	RCA	1	0	1	0	1	1	1	1	1	1	1	1	0	1	1	12	5
1	RCA	-1	0	1	1	1	1	1	4	1	1	1	1	0	1	1	14	5
2	RCA	0	0	1	0	1	-1	1	4	1	1	1	1	1	1	1	13	5
3	RCA	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	18	5
4	RCA	-1	1	1	0	1	1	0	2	1	0	0	1	1	1	1	10	5
6	RCA	0	0	1	1	1	1	1	2	1	1	1	1	1	1	1	14	5
1	RCA	3	0	1	1	1	0	1	3	1	1	1	1	1	1	1	17	5
2	RCA	0	1	1	1	1	-2	4	1	1	1	1	1	1	1	1	14	5
6	RCA	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	13	5
7	RCA	2	0	1	1	1	1	1	4	1	1	1	1	1	1	1	18	5
9	RCA	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17	5
11	RCA	1	0	1	1	1	-1	1	4	1	1	1	1	1	1	1	15	5
12	RCA	3	0	1	1	1	-3	1	4	1	1	1	1	1	1	1	15	5

Table 207. (continued)

1	RCA	-1	1	0	1	1	1	0	3	0	0	1	1	0	1	0	9	6
2	RCA	0	0	1	1	1	1	1	2	1	1	0	1	0	1	1	12	6
3	RCA	-1	1	0	1	0	1	0	2	0	1	0	0	0	1	1	7	6
4	RCA	0	1	0	0	0	1	1	-1	1	1	0	1	0	0	0	5	6
4	RCA	1	0	1	1	1	1	1	3	1	1	1	1	0	1	1	15	5
7	RN	1	0	1	1	1	1	1	4	1	1	1	1	1	1	1	17	5
5	RN	3	0	1	1	1	1	0	4	1	1	1	1	1	1	1	18	5
5		1	1	1	0	1	1	1	2	1	1	1					12 of 19	5
14		-1	1	1	0	1	-1	1	2	1	1	0	1	0	0	0	7	1
2		0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	13	3
22		1	1	1	0	1	-2	1	0	1	1	0	1	1	1	1	9	3
23		0	1	1	1	1	-2	1	4	1	1	0	1	0	1	1	12	3
26		1	0	1	1	1	1	1	3	1	1	1	1	0	1	1	15	3
9		2	1	1	1	1	1	1	2	1	1	1	0	0	1	1	15	4
1		1	0	0	1	1	1	1	3	1	1	1	1	1	1	1	15	5
2		1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17	5
6		-1	0	1	1	1	-1	1	5	1	1	1	1	1	1	1	14	5
3		1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	17	5
4		1	0	1	1	1	-1	0	3	1	0	1	1	0	1	1	11	5
8		2	1	1	1	1	1	1	3	1	1	1	1	1	1	1	18	5
10		1	0	0	1	0	1	1	3	1	1	1	1	1	1	1	14	5

TOTAL POSSIBLE POINTS: 22.

Total *n* for immediate post-test: 102.

Numbers across the top indicate question number; numbers in each block indicate points received by participant for that question.

Questions with the notation "PRE" indicate changes in order of the questions from the pre-test. For instance, #1 on the post-test equals #3 on the pre-test (1=3PRE). Questions 1, 2, 3, 4, 6 and 8 were re-ordered as indicated from the pre-test.

Table 208. Raw scores data for all participant for follow up post-test, sorted by job

FORM	JOB	1=3 PRE	2=1 PRE	3=4 PRE	4=2 PRE	5	6=8 PRE	7	8=6 PRE	9	#10	#11	#12	#13	#14	#15	TOTAL	FACILITY
A3	ACT	2	0	1	1	0	1	1	5	0	1	1	1	1	1	1	17	3
8	DIET	1	1	1	0	0	1	1	1	1	1	1	0	1	1	1	12	2
20	DIET	-1	1	1	1	0	1	1	4	1	1	1	0	1	1	1	14	2
1	HOUSE	2	1	1	1	1	1	1	6	1	1	1	0	1	1	1	20	1
2	HOUSE	-1	0	1	0	1	1	1	2	1	0	0	1	1	1	1	10	1
3	HOUSE	-1	1	1	1	1	1	1	4	1	1	1	0	0	1	1	14	1
5	HOUSE	-1	1	1	0	0	1	1	1	0	0	1	0	1	0	0	6	1
B6	HOUSE	1	0	1	0	0	1	1	4	1	1	1	0	0	1	1	13	3
B3/24	HOUSE	0	0	1	0	1	-1	1	3	1	1	1	0	1	1	1	11	3
B5/25	HOUSE	1	0	1	1	1	-1	1	2	1	1	1	1	0	1	1	12	3
6	HOUSE	2	0	1	0	1	1	1	5	1	1	1	1	1	1	1	18	2
12	HOUSE	2	0	1	0	1	1	1	5	1	1	1	1	1	1	1	18	2
13	HOUSE	2	0	1	0	1	1	1	5	1	1	1	1	1	1	0	17	2
15	KITCHEN	-1	1	1	1	1	1	1	4	1	1	1	0	1	1	1	15	2
17	KITCHEN	1	0	1	0	1	1	1	2	1	1	1	0	1	1	1	13	2
7	LPN	1	0	1	1	0	-1	1	4	1	0	0	1	1	0	1	11	1
8	LPN	1	0	1	1	0	-1	1	4	1	0	0	0	1	0	1	10	1
7	LPN	1	1	0	1	1	-1	1	3	1	0	0	1	1	1	0	11	4
8	LPN	1	0	1	0	1	1	0	1	1	0	1	0	1	1	1	10	5
A8	MAIN	-1	1	1	1	1	-3	1	6	1	1	1	1	1	1	1	14	3
A9	MAIN	1	0	1	0	1	-1	1	4	1	1	1	0	1	1	1	13	3
4	NRSG	2	1	1	0	0	1	1	3	1	1	1	1	1	0	1	15	2
B9	NRSG	0	0	1	0	0	1	1	6	1	0	1	0	1	1	1	14	3
13	NRSG	2	1	1	0	1	-2	1	6	1	1	1	1	1	1	1	17	3
A14	NRSG	-3	1	1	0	1	-2	1	6	1	1	1	1	1	1	1	12	3
15	NRSG	0	0	1	0	1	-1	1	6	1	1	1	1	1	1	1	15	3
20	NRSG	1	1	1	1	1	1	1	5	1	1	1	0	1	1	1	18	3
	NRSG	2	0	0	1	1	1	1	4	1	1	1	1	1	1	1	17	3
	NRSG	3	1	1	0	1	1	1	5	1	1	1	1	1	1	1	20	3
1	NRSG	1	0	1	0	1	1	1	4	1	1	1	1	1	1	1	16	4
3	OFFICE	-1	1	1	1	1	1	1	5	1	1	1	0	1	1	1	16	2
9	OFFICE	-1	0	0	0	1	1	1	3	1	1	0	1	1	1	0	10	2
A6	OFFICE	0	0	1	1	0	1	1	4	1	0	1	0	1	1	0	12	3
16	OFFICE	2	1	1	1	1	0	1	3	1	1	1	1	1	1	1	17	3
9	RCA	1	1	1	1	1	-1	1	3	1	1	1	0	1	1	1	14	1
12	RCA	1	1	1	0	1	0	1	5	1	1	1	0	0	1	0	14	1
18	RCA	1	0	1	0	0	0	1	2	1	0	0	0	1	1	1	9	1
2	RCA	1	1	1	0	1	1	1	6	1	1	1	1	1	1	1	19	2
5	RCA	2	0	1	1	1	-2	1	5	1	1	1	1	1	1	0	15	2
24b	RCA	0	0	1	0	1	-1	1	3	1	1	1	1	1	1	1	12	2

Table 208. (continued)

25	RCA	-2	0	1	0	1	-1	1	3	1	1	1	0	1	1	1	9	2
1A	RCA	3	0	1	0	1	-1	1	4	1	1	1	0	1	1	1	15	3
1B	RCA	2	0	1	0	1	-2	1	2	1	1	1	1	1	1	1	12	3
2B	RCA	0	0	1	0	1	-2	1	3	1	0	1	1	1	1	1	10	3
6	RCA	2	0	1	1	1	0	0	4	1	1	1	1	1	1	1	16	3
A7	RCA	2	0	0	1	0	1	1	3	1	1	1	0	0	1	1	13	3
17	RCA	3	0	1	0	1	0	1	5	1	1	1	0	1	1	1	17	3
19	RCA	1	0	1	1	1	-2	1	3	1	0	1	0	1	1	1	11	3
5	RCA	0	1	1	0	1	1	1	4	1	0	1	1	0	1	1	14	4
9	RCA	0	0	1	0	1	-1	1	2	1	0	0	0	0	1	1	7	4
10	RCA	0	1	1	1	1	1	1	3	1	1	1	0	1	1	1	15	4
12	RCA	1	0	1	0	1	1	1	3	1	1	1	1	1	1	1	15	4
13	RCA	2	1	1	1	1	-2	1	3	1	1	1	1	1	1	1	15	4
2	RCA	2	1	1	1	1	1	0	3	1	1	1	1	1	1	1	17	5
9	RCA	1	0	1	1	1	-3	1	5	1	1	1	1	1	1	1	14	5
10	RCA	1	0	1	0	1	-2	1	3	1	1	1	1	1	1	1	12	5
11	RCA	0	1	1	1	1	1	1	5	1	1	1	1	0	1	0	16	5
12	RCA	0	1	1	0	1	-1	0	3	1	0	1	1	1	1	0	10	5
13	RCA	-1	1	1	0	0	1	1	4	0	1	1	1	1	1	0	12	5
14	RCA	1	0	1	1	1	1	0	2	1	0	1	1	1	1	0	12	5
15	RCA	2	0	0	0	1	0	1	0	1	1	1	1	1	1	0	10	5
16	RCA	1	1	1	1	0	1	1	4	1	0	1	1	1	1	1	16	5
17	RCA	1	1	1	1	1	-1	1	2	1	0	1	1	0	1	1	12	5
18	RCA	2	1	1	1	1	0	0	3	1	1	1	0	1	1	1	15	5
19	RCA	2	1	1	1	1	-1	0	4	1	1	1	0	1	1	1	15	5
20	RCA	-1	0	1	0	1	-1	1	4	1	1	1	1	1	1	0	11	5
21	RCA	-1	0	1	1	1	1	1	5	1	1	1	1	0	1	0	14	5
22	RCA	2	1	1	1	1	0	1	4	1	0	1	1	1	0	1	16	5
23	RCA	0	1	1	1	1	1	1	5	1	1	1	1	1	1	1	18	5
24	RCA	0	1	1	1	1	1	1	5	1	1	1	1	1	1	1	18	5
25	RCA	2	1	1	0	1	-1	0	3	1	1	1	1	1	1	1	14	5
1	RN	1	0	1	1	1	1	1	3	1	1	1	1	1	1	1	16	5
3	RN	1	0	1	0	0	0	0	2	1	1	1	0	1	1	1	10	5
4	RN	2	1	1	1	1	0	0	3	1	1	1	1	1	1	1	16	5
5	RN	0	0	1	0	1	1	1	4	1	1	1	1	1	1	1	15	5
6	RN	1	0	1	1	1	-2	1	4	1	1	1	0	1	1	1	13	5
7	RN	2	0	1	1	1	0	1	3	1	1	1	1	1	1	0	15	5
14		1	0	1	0	1	0	1	4	1	0	0	1	0	0	1	11	1
1		1	1	1	0	1	-1	1	1	1	1	1	1	0	1	1	11	2
14		0	1	1	0	1	1	1	5	1	1	1	0	1	1	1	16	2
no#		-2	0	1	1	0	1	1	2	0	1	0	0	1	1	1	8	2

Table 208. (continued)

		-1	0	1	0	1	-1	1	0	1	1	1	0	1	1	1	7	3
		-1	0	1	1	0	1	1	0	0	0	0	0	0	1	1	5	3

TOTAL POSSIBLE POINTS: 22

Total *n* for follow up post-test: 83.
Numbers across the top indicate question number; numbers in each block indicate points received by participant for that question.

Table 209. Comparative analyses of all participants across all facilities by pre-test, immediate post-test and follow up test

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	106	0	22	10.84	3.269
POST	101	5	20	14.18	2.944
FOLLOW	83	5	20	13.55	3.194
Valid N (listwise)	83				

Friedman Test

Ranks

	Mean Rank
PRE	1.41
POST	2.36
FOLLOW	2.23

Test Statistics[a]

N	83
Chi-Square	46.949
df	2
Asymp. Sig.	.000

a. Friedman Test

Data from all participants combined, with comparison of scores on pre-test, immediate post-test and follow up post-test demonstrated a significant increase in scores from pre-test to the two post-tests. Eighty-three participants were analyzed across all three tests, demonstrating an increase in means at a significance level of 0.000. This indicates that the improvements noted were not due to chance, but rather due to an outside influence, in this case, the training program.

Table 210. Comparison of all participants across facilities and jobs, on pre-test and immediate post-test

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	106	0	22	10.84	3.269
POST	101	5	20	14.18	2.944
Valid N (listwise)	101				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST - PRE	Negative Ranks	17[a]	25.97	441.50
	Positive Ranks	76[b]	51.70	3929.50
	Ties	8[c]		
	Total	101		

a. POST < PRE

b. POST > PRE

c. POST = PRE

Test Statistics[a]

	POST - PRE
Z	-6.695[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The WSRT comparison of the pre-test data compared to the immediate post-test data indicates that participants demonstrated a statistically significant improvement from the pre-test to the post-test, indicating improved knowledge of fall risk factors and falls prevention after the educational program. With a significance value of 0.000, it is unlikely that the changes noted are due to chance.

Table 211. Comparative analysis of all participants' pre-test scores to the follow up post-test sores, re-assessed at variable intervals ranging from approximately six weeks to nearly three months

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	106	0	22	10.84	3.269
FOLLOW	83	5	20	13.55	3.194
Valid N (listwise)	83				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - PRE	Negative Ranks	18[a]	33.50	603.00
	Positive Ranks	63[b]	43.14	2718.00
	Ties	2[c]		
	Total	83		

a. FOLLOW < PRE

b. FOLLOW > PRE

c. FOLLOW = PRE

Test Statistics[a]

	FOLLOW - PRE
Z	-4.989[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Although the difference in the means of the scores is slightly less, these analyses demonstrate that a significant difference remains between the pre-test scores and the follow up scores, and that this difference is not likely due to chance. This indicates that information was retained over time, i.e., that learning has occurred in this area.

431

Table 212. Comparative analysis between immediate post-test scores and follow up post-test scores of all participants

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POST	101	5	20	14.18	2.944
FOLLOW	83	5	20	13.55	3.194
Valid N (listwise)	83				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - POST	Negative Ranks	40[a]	42.60	1704.00
	Positive Ranks	33[b]	30.21	997.00
	Ties	10[c]		
	Total	83		

a. FOLLOW < POST

b. FOLLOW > POST

c. FOLLOW = POST

Test Statistics[a]

	FOLLOW - POST
Z	-1.952[b]
Asymp. Sig. (2-tailed)	.051

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

These analyses suggest that there was a change, a decrease, in performance on the follow up test scores compared to the immediate post-test scores. This suggests that, possibly, some knowledge was not retained over time, but the vast majority (considering the other analyses in addition to these) of the information was recalled.

D.7.2 Data for all RCAs (resident care aides) - Comparative statistics for pre-test, immediate post-test, and follow up post-test, and related data analyzed according to reported job title

This subsection contains the raw data and statistical analyses from Facilities 1-5. Facility 6 will not be included, as the administrator at that facility did not respond to follow up. The analyses for all RCAs across all facilities are analyzed with descriptive and comparative statistics. RCAs are the primary target audience for this program. Only participants who clearly identified themselves as RCAs are included in these analyses. Based on the demographic information provided, there are more in the group, however some did not identify themselves on their exam sheets, while others wrote NRSG instead, thus it was not possible to clearly identify all of the RCAs.

Table 213. Comparative analyses of pre-test, immediate post-tests and follow up tests for individuals who identified themselves as resident care aides

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	45	5	17	10.98	2.598
POST	47	5	20	14.06	3.131
FOLLOW	37	7	19	13.62	2.802
Valid N (listwise)	37				

Friedman Test

Ranks

	Mean Rank
PRE	1.42
POST	2.45
FOLLOW	2.14

Test Statistics[a]

N	37
Chi-Square	21.394
df	2
Asymp. Sig.	.000

a. Friedman Test

When considering only the group of RCAs, an overall improvement is noted between the pre-test and the two post-tests. The improvement on these tests are statistically significant, indicating that the educational program, not chance , imparcted the performance of the participants.

Table 214. Comparative statistics of RCA test scores on the pre-test versus the immediate post-test

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	45	5	17	10.98	2.598
POST	47	5	20	14.06	3.131
Valid N (listwise)	45				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST - PRE	Negative Ranks	7[a]	14.86	104.00
	Positive Ranks	36[b]	23.39	842.00
	Ties	2[c]		
	Total	45		

a. POST < PRE

b. POST > PRE

c. POST = PRE

Test Statistics[a]

	POST - PRE
Z	-4.467[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Forty-five RCAs completed both tests and were analyzed. Their performance on the test improved significantly after the educational program compared to their performance prior the educational program. With a significance value of 0.000, this change is not likely attributed to chance, thus the educational program appears to have significantly influenced the performance of the RCAs on the test.

Table 215. Comparison of RCAs' scores on pre-tests compared to follow up post-tests across all facilities

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	45	5	17	10.98	2.598
FOLLOW	37	7	19	13.62	2.802
Valid N (listwise)	37				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - PRE	Negative Ranks	10[a]	12.20	122.00
	Positive Ranks	26[b]	20.92	544.00
	Ties	1[c]		
	Total	37		

a. FOLLOW < PRE

b. FOLLOW > PRE

c. FOLLOW = PRE

Test Statistics[a]

	FOLLOW - PRE
Z	-3.327[b]
Asymp. Sig. (2-tailed)	.001

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The analyses of the data here indicate that most of the information presented to the RCAs was retained over time, as based on the comparison of the pre-test to the follow up post-tests. The significance level and the difference between the two means was not quite as good compared to the previous analyses, however the difference was still quite good, with a significance level of 0.001.

Table 216. Comparison of RCAs across all facilities on immediate post-test to follow up post-test

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POST	47	5	20	14.06	3.131
FOLLOW	37	7	19	13.62	2.802
Valid N (listwise)	37				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - POST	Negative Ranks	20[a]	19.18	383.50
	Positive Ranks	14[b]	15.11	211.50
	Ties	3[c]		
	Total	37		

a. FOLLOW < POST

b. FOLLOW > POST

c. FOLLOW = POST

Test Statistics[a]

	FOLLOW - POST
Z	-1.474[b]
Asymp. Sig. (2-tailed)	.140

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

These analyses support what was found previously with the RCAs' scores: learning occurred as evident by statistically significant improvement on the 2 post-tests compared to the pre-tests, however there was some decrease in information retention between the immediate post-test and the follow up post-test. This decrease, however, is statistically insignificant, indicating an overall strong retention of the content presented.

D.7.3   Data for all RNs/LPNs -- Descriptive and comparative analyses across all facilities

This section contains the raw data and statistical analyses from Facilities 1-5. Facility 6 will not be included, as the administrator at that facility did not respond to follow up. The analyses of the data for all RNs/LPNs will be presented in this subsection. Due to their professional training, RNs and LPNs were to be excluded from this presentation. Nonetheless, a number of the administrators included nurses in the program. Only participants who clearly identified themselves as LPNs/RNs are included in these analyses. There are more in the group, however some of them did not identify themselves on their exam sheets, while others wrote NRSG instead.

Table 217. Comparative statistics for LPNs/RNs on their pre-test, immediate post-test and follow up post-tests

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	6	8	16	10.00	2.966
POST	10	13	18	15.70	2.359
FOLLOW	10	10	16	12.70	2.584
Valid N (listwise)	6				

Friedman Test

Ranks

	Mean Rank
PRE	1.33
POST	2.83
FOLLOW	1.83

Test Statistics[a]

N	6
Chi-Square	7.000
df	2
Asymp. Sig.	.030

a. Friedman Test

Although the *n* is small for the combined group of LPN/RNs, with a total of 6 available for analysis across all three tests, a slight but significant difference was found among the three test scores. Additional analyses reveal differences among the different stages of testing, however this information remains somewhat limited due to the small n. More nurses than are represented here did participate, as evident by the descriptive demographic forms filled out by participants, however there is no way to know which scores under NRSG and those which are unlabeled altogether fit into this category. Having that information could have strengthened the power of these analyses.

Table 218. Comparison of pre-test and immediate post-test scores of those identified as LPN/RNs

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	6	8	16	10.00	2.966
POST	10	13	18	15.70	2.359
Valid N (listwise)	6				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST - PRE	Negative Ranks	1[a]	1.00	1.00
	Positive Ranks	5[b]	4.00	20.00
	Ties	0[c]		
	Total	6		

a. POST < PRE

b. POST > PRE

c. POST = PRE

Test Statistics[a]

	POST - PRE
Z	-2.003[b]
Asymp. Sig. (2-tailed)	.045

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

With an *n* of only six for comparison, the information garnered from these statistics is limited. Nonetheless, the range of scores from pre-test to immediate post-test, as well as the means demonstrated an increase from pre-test to immediate post-test, and the WSRT indicates that this difference is significant. This finding is a little surprising, as it was surmised by the PI that this information would be too basic for nursing professionals to benefit from the presentation. Despite that supposition, it appears that these participants did gain knowledge from the program.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	6	8	16	10.00	2.966
FOLLOW	10	10	16	12.70	2.584
Valid N (listwise)	6				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - PRE	Negative Ranks	1[a]	5.00	5.00
	Positive Ranks	5[b]	3.20	16.00
	Ties	0[c]		
	Total	6		

a. FOLLOW < PRE

b. FOLLOW > PRE

c. FOLLOW = PRE

Test Statistics[a]

	FOLLOW - PRE
Z	-1.156[b]
Asymp. Sig. (2-tailed)	.248

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The difference between the pre-test and the follow up post-test scores does not meet the criteria for statistical significance. The participants did not perform as well at follow up as they did immediately post-presentation. Again, the *n* is six, and thus the data have limited generalizability and limited inferences may be made from these data.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POST	10	13	18	15.70	2.359
FOLLOW	10	10	16	12.70	2.584
Valid N (listwise)	10				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - POST	Negative Ranks	9[a]	5.56	50.00
	Positive Ranks	1[b]	5.00	5.00
	Ties	0[c]		
	Total	10		

a. FOLLOW < POST

b. FOLLOW > POST

c. FOLLOW = POST

Test Statistics[a]

	FOLLOW - POST
Z	-2.324[b]
Asymp. Sig. (2-tailed)	.020

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

This sample was slightly larger, with an *n* of 10 for comparison. There was a decline in performance from the immediate post-test and follow up post-test. The analysis indicated that this difference is significant. Despite the larger *n,* this remains a somewhat small sample from which to draw inferences.

D.7.4 Data for all who identified themselves as housekeeping.

This section contains the raw data and statistical analyses from Facilities 1-5. Facility 6 will not be included, as the administrator at that facility did not respond to follow up. Data for individuals who identified themselves as housekeeping will be presented in this subsection. Because housekeepers are in something of a unique position to fairly closely observe both residents and their environment, they will be analyzed separately, as well as with the "Other" non-caregiving staff.

Table 221. Comparative statistics for participants identified as housekeeping for pre-tests, immediate post-tests and follow up post-tests

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	10	3	15	9.10	4.149
POST	9	9	16	12.56	2.455
FOLLOW	10	6	20	13.90	4.358
Valid N (listwise)	9				

Friedman Test

Ranks

	Mean Rank
PRE	1.39
POST	2.28
FOLLOW	2.33

Test Statistics[a]

N	9
Chi-Square	5.515
df	2
Asymp. Sig.	.063

a. Friedman Test

With an *n* of nine to be analyzed across all three exams, although a change in scores can be observed, it is not statistically significant.

Table 222. Comparative statistics for participants identified as housekeeping for pre-test and immediate post-test scores

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	10	3	15	9.10	4.149
POST	9	9	16	12.56	2.455
Valid N (listwise)	9				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST - PRE	Negative Ranks	1[a]	2.00	2.00
	Positive Ranks	7[b]	4.86	34.00
	Ties	1[c]		
	Total	9		

a. POST < PRE

b. POST > PRE

c. POST = PRE

Test Statistics[a]

	POST - PRE
Z	-2.309[b]
Asymp. Sig. (2-tailed)	.021

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The difference between the pre-test scores and immediate post-test scores is statistically significant. This trend is observable in the range and means of the scores. This indicates that there was a significant improvement in performance on the post-test, after the educational program, compared to the pre-test.

Table 223. Comparative statistics between pre-test scores and follow up post-test scores for participants identified as housekeeping

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	10	3	15	9.10	4.149
FOLLOW	10	6	20	13.90	4.358
Valid N (listwise)	10				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - PRE	Negative Ranks	2[a]	2.00	4.00
	Positive Ranks	8[b]	6.38	51.00
	Ties	0[c]		
	Total	10		

a. FOLLOW < PRE

b. FOLLOW > PRE

c. FOLLOW = PRE

Test Statistics[a]

	FOLLOW - PRE
Z	-2.398[b]
Asymp. Sig. (2-tailed)	.016

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Both an observable and statistically significant improvement in follow up post-test scores compared to pre-test scores is apparent. This suggests that the participants retained a significant amount of information over time.

Table 224. Comparison of immediate post-test and follow up post-test scores for housekeeping

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POST	9	9	16	12.56	2.455
FOLLOW	10	6	20	13.90	4.358
Valid N (listwise)	9				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - POST	Negative Ranks	3[a]	2.50	7.50
	Positive Ranks	4[b]	5.13	20.50
	Ties	2[c]		
	Total	9		

a. FOLLOW < POST

b. FOLLOW > POST

c. FOLLOW = POST

Test Statistics[a]

	FOLLOW - POST
Z	-1.103[b]
Asymp. Sig. (2-tailed)	.270

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The difference between the immediate post-test and follow up post-test scores is not statistically significant. This information, along with the information of the statistical differences between the pre-test scores and the immediate post-test scores and follow post-test scores each, suggests that learning occurred, and remained fairly stable over time.

D.7.5   Data for all non-caregiving staff, noted as "OTHER"

This section contains the raw data and statistical analyses from Facilities 1-5. Facility 6 will not be included, as the administrator at that facility did not respond to follow up. In this subsection, the group of non-caregiving staff will be analyzed. This group includes: kitchen staff, office staff, activities staff, housekeeping, maintenance, drivers, and test scores without any identification.

Table 225. Comparative statistics on participants who have limited or no contact with residents

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	44	3	15	10.36	3.089
POST	35	7	19	13.46	2.790
FOLLOW	27	5	20	12.96	3.818
Valid N (listwise)	27				

Friedman Test

Ranks

	Mean Rank
PRE	1.48
POST	2.15
FOLLOW	2.37

Test Statistics[a]

N	27
Chi-Square	12.356
df	2
Asymp. Sig.	.002

a. Friedman Test

The group is rather disparate, with a variety of jobs and roles represented. Although this program was not created with these individuals in mind, maintenance, activities, housekeeping and possibly some of the office staff have some exposure to the residents and/or their environment. For that reason, these participants may benefit from an educational program such as this, as they may be able to make adjustments in the environment and/or report observed changes in residents to the appropriate person. Kitchen staff, drivers, and dietary staff likely have little need for this program, however they were included in some facilities nonetheless. The analyses here across the three test administrations indicate that a statistically significant increase in scores from the pre-test to the post-tests occurred. For these analyses, an *n* of 27 could be analyzed across all three exams.

Table 226. Comparative analyses of pre-test to immediate post-test scores for non-caregiving staff participants

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	44	3	15	10.36	3.089
POST	35	7	19	13.46	2.790
Valid N (listwise)	35				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
POST - PRE	Negative Ranks	7[a]	6.43	45.00
	Positive Ranks	25[b]	19.32	483.00
	Ties	3[c]		
	Total	35		

a. POST < PRE

b. POST > PRE

c. POST = PRE

Test Statistics[a]

	POST - PRE
Z	-4.104[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

With a rather large n of 35 for these analyses, the participants improved significantly from their pre-test to the immediate post-test scores, as evidenced by the significance value of 0.000, well beyond the established value of 0.05.

Table 227. Comparative statistics for pre-test versus follow up post-scores for the sample of non-caregiving staff

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PRE	44	3	15	10.36	3.089
FOLLOW	27	5	20	12.96	3.818
Valid N (listwise)	27				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - PRE	Negative Ranks	5[a]	11.80	59.00
	Positive Ranks	21[b]	13.90	292.00
	Ties	1[c]		
	Total	27		

a. FOLLOW < PRE

b. FOLLOW > PRE

c. FOLLOW = PRE

Test Statistics[a]

	FOLLOW - PRE
Z	-2.963[b]
Asymp. Sig. (2-tailed)	.003

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

These data indicate that the information presented during the educational program was retained over time, as a statistically significant difference between the pre-test and follow up post-test scores remains. This disparate group completed their follow up tests anywhere from six weeks to greater than 3 months post-presentation, yet their performance on the post-test remained statistically strong compared to that on the pre-test.

Table 228. Comparative statistics of immediate post-test scores versus the follow up post-test scores for non-caregiving staff

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POST	35	7	19	13.46	2.790
FOLLOW	27	5	20	12.96	3.818
Valid N (listwise)	27				

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
FOLLOW - POST	Negative Ranks	10[a]	13.70	137.00
	Positive Ranks	14[b]	11.64	163.00
	Ties	3[c]		
	Total	27		

a. FOLLOW < POST

b. FOLLOW > POST

c. FOLLOW = POST

Test Statistics[a]

	FOLLOW - POST
Z	-.373[b]
Asymp. Sig. (2-tailed)	.709

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

There is a minimally observable change in the difference in the ranges and the means of the two tests, indicating a very slight decline (0.50 in the means, for example) in the follow up post-test compared to the immediate post-test. It is not unexpected that there might be a decline over time, however the data here demonstrate that the decline in this group is minimal, nowhere near clinical significance. The test scores remained rather stable over time, indicating that learning as measured by this test had occurred on the part of the participants. This is supported by the statistically significant improvements noted between the pre-test and the immediate post-test, as well as the pre-test and follow up post-test.

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