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Fall Reduction Among the Geriatric Population in Assisted Living Facilities

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Walden University

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Marylyn Hagerty

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Walden University
2018

Abstract

Fall Reduction Among the Geriatric Population in Assisted Living Facilities

by

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MSN, University of Phoenix, 2011

BSN, University of Phoenix, 2009

AS, Long Beach City College, 1975

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

August 2018

Abstract

Incidents of falls among the elderly increase with age. About $31 million is spent annually in the United States on medical costs related to fall injuries in the elderly. This project evaluated the outcomes of a fall reduction program implemented in an assisted living facility (ALF). The Stop Elderly Accidents, Death & Injury program developed by the Centers for Disease Control and Prevention was implemented by the ALF for 60 days prior to the outcome evaluation project. The program included a convenience sample of 62 residents and involved medication evaluation, exercises, assistive devices, environmental risk reduction, and evaluation of blood pressure. Bandura's theory on self-efficacy was applied in guiding the implementation process. The practice-focused question compared the fall rate among the ALF's elderly residents during the 30-day period following implementation of the program, and the previous 12months. The fall rates were analyzed with descriptive statistics. Results showed the preintervention fall rate was 6.6 falls per month, while at the end of the 30-day postimplementation period, that rate was reduced by 39.4% to 4 falls per month. The conclusion of this outcome-evaluation project is that falls among the elderly in the ALF can be reduced with evidence-based programs. The recommendation is that ALFs should have fall reduction programs, thereby avoiding unnecessary complications of falls among elderly residents. Implications for nursing practice include improved understanding of falls as a safety issue for ALF residents and the need for nurse practitioners to take a more active role as advocates for fall prevention programs in ALFs. The positive societal change produced is improved safety and reduction in fall injuries among the elderly in assisted living facilities.

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Section 1: Nature of the Project

Introduction

Unintentional falls are a major cause of morbidity and mortality in the geriatric population (Alamgir, Muazzam, & Nasrullah, 2012). According to the Centers for Disease Control and Prevention (2016), injuries related to falls are the leading causes of disability and death in the elderly. Further, the incidence of falls progresses as the population ages, placing greater socioeconomic burdens on families (Shubert, 2011). There are many consequences of falls: (a) falls are feared by the elderly, family members, and institutions because of the physical consequences (fractures, restricted and decreased physical activity, and a decline in health status); (b) falls have psychological consequences, such as social isolation, depression, and the risk of the elderly either being placed in a skilled nursing facility or being hospitalized (Brito, Coqueiro, & de Jesus, 2014); (c) falls among older adults cost the U.S. healthcare system approximately 34 billion dollars each year to treat (Centers for Disease Control and Prevention, 2016).

Patients 65 years and older who have sustained a fall, with or without injury, may experience increased levels of fear, anxiety, weakness, and loss of independence (Soriano, 2007). They may also reduce their participation in daily activities and experience increased deconditioning, social isolation, and reduced pleasure in and quality of life (Jung, Shin, & Kim, 2014). Reducing the incidence of falls in the geriatric population is a significant and challenging practice problem (Alamgir et al., 2012).

For the purpose of this DNP doctoral project, the target population was a group of elderly residents who live in an assisted living facility (ALF) that recently implemented an evidence-based fall reduction program. The ALF's leadership's goals were to address the residents' unknown fall rate and to make social changes that would positively impact the quality of life in the ALF. They also wanted to assure their elderly clients that their health care providers had focused on reducing their risk for falls that could have debilitating consequences to their health. The DNP project purpose was to evaluate the outcomes of implementing this fall reduction program.

Problem Statement

The location for this DNP project was an ALF anecdotally reported to have a high rate of falls. However, the ALF did not have a fall reduction program, and there was a high turnover in its staff. Current practice was for facility staff to complete an incident report when a fall occurred and to send the report to management; however, there was no follow-through after the report was sent and no central data collection about fall rates. Facility caregivers lacked understanding regarding the significance of falls in the elderly, and this was a problem for the safety of the residents.

In the United States the average rate of falls is 30% to 40% among people 65 years or older, and the rate increases with age to 40% to 50% among those 80 years or older (Albert et al., 2014). The growing incidence of accidental falls in the geriatric population who reside in an ALF has severe consequences to individuals and family members. The Centers for Disease Control reported over 800,000 hospitalizations each

year due to fall injuries in elderly adults ages 65 and older (Centers for Disease Control, 2017). Falls in this age group are three times more frequent for those who live in institutional settings than those who are living in the community (Crilly, Gibson, Gutmanis, Kloseck, & Tariq, 2013). Furthermore, falls can have physical, psychological, and social consequences and can leave victims injured, debilitated, dependent, and in fear of future falls (Stenhagen, Ekstrom, Nordell, & Elmstahl, 2014).

Due to the high risk of falls in ALFs, one would think there would be regulations requiring every ALF to have a fall reduction program. In California, the Department of Social Services, Community Care Licensing Division licenses residential care facilities for the elderly such as the ALF where this project was implemented. There are many regulations addressing activities in the ALF, such as which chemicals to use to clean hazardous spills properly, but there are no regulations requiring facilities to have a fall reduction program.

Individuals in the nursing field are in a position to have a significant impact on reducing falls among the elderly. Because nurses are intimately involved in care for the elderly, they are often closest to the problem and are best positioned to enact prevention. These interventions are of the utmost importance in the ALF studied, where there is a large number of active geriatric residents. It is important to ensure that nurses at this project's ALF promote interventions to reduce patients' risk and rate of falls. Because this ALF understood the significance of the problem, they recently implemented an evidence-based fall reduction program.

Purpose Statement

The purpose of this DNP quality improvement project was to evaluate the outcomes of the fall reduction program implemented at the ALF and document whether it was effective in reducing fall rates. There was no evaluation of this fall reduction program prior to the DNP project. There was a gap in the healthcare practice at this facility and it presented a risk to the safety of the elderly who reside there. The guiding practice-focused question was "How will the implementation of an evidence-based fall reduction program in an ALF in urban southern California the impact the fall rate among the elderly residents as measured by a 30-day post-implementation evaluation of fall rates compared to the previous 12 months?"

The ALF implemented four assessments and corresponding intervention components from the multidimensional program: Stop Elderly Accidents, Death & Injury (STEADI) (Centers for Disease Control and Prevention, 2017). The components included: (a) fall risk assessment using the Stay Independent checklist, (b) medication review using the Screen Assess Formulate Educate (SAFE) medication review tool, (c) The Timed Up and Go (TUG) gait-agility test, and, (d) screening for postural hypotension (National Council on Aging, 2017).

The ALF staff implemented the components of the STEADI program, including educating patients and staff about fall reduction techniques; managing medications; teaching exercises to enhance functional mobility, strength, and balance; and monitoring and managing postural hypotension (Centers for Disease Control and Prevention, 2017).

Research shows it is most important for fall reduction programs to incorporate these components because coordination, strength, agility, and balance are particularly important in fall reduction (Robertson, Campbell, Gardner, & Devlin, 2002).

The elderly population in the United States is increasing with the passage of time. Additionally, the incidents of falls in the elderly are increasing which is increasing the cost of healthcare. Due to the increase in elderly falls, the elderly are refraining from participation in various activities and due to this many are placed in an institutional setting. Moreover, it is known to be better for elderly to remain in a community setting rather than an institutional setting. This has raised the need to act to decrease fall incidences among the elderly to participate in activities. The project assisted living facility realized the significance of the fall problem, and in attempt to address the problem recently implemented an evidence-based fall reduction program.

I evaluated outcomes of fall incidents 30 days after the ALF implemented the program. The facility provided me with de-identified fall data for a 1 year period before implementation of the evidence-based fall reduction program and 30 days postimplementation. I developed a Microsoft Excel spreadsheet to collect the fall data, since this facility did not have an electronic medical record (EMR) system capable of collecting the data. The project evaluation addressed gaps in practice by documenting the fall rate in the ALF after the implementation of the evidence-based fall reduction program and enhancing the staff knowledge about the ALF's fall rates, fall reduction, and fall risk management.

Nature of the Doctoral Project

The nature of this doctoral project was to evaluate the outcomes of the implementation of an evidence-based fall reduction program, STEADI, at an ALF that previously did not have a fall reduction program. To show a reduction in falls at the ALF, it was necessary to evaluate the rate of falls at the ALF in the prior 12 months. This assessment included a review of the facility's previous 12 months of incident reports of falls and self-reported falls, as well as the facility's current individual corrective measure(s) taken to deal with the falls. I analyzed the de-identified data in the Excel document. Fall incidents which occurred after the ALF had implemented the fall reduction program were documented on a similar de-identified form developed specially for continued fall reports in the participating facility. Additionally, the staff at the facility was educated in the continued documentation of fall components as necessary to maintain the fall reduction rates. The DNP student worked with the administration at the facility to ensure all staff with direct contact with the elderly residents understood the purpose of documenting.

The practice setting for this doctoral project was an ALF that houses patients 65 years of age and older. This ALF is in Southern California and is an organization in which this DNP student currently works as a nurse practitioner. A major topic in the staff meetings at this ALF revolved around falls and fall reduction. This doctoral project was designed to evaluate the outcomes of the evidence-based fall reduction program STEADI, which the ALF had implemented as a quality improvement project.

After the facility implemented the STEADI program, the nursing staff was trained in the use of the necessary the tools and assessment forms, using the training videos offered by the STEADI program. During the project evaluation, nursing team members and administrative staff, including the DNP student, participated in weekly meetings to discuss progress and the evaluation of outcomes.

The STEADI program staff implemented at the ALF included three steps to reduce the rate of falls: (a) screen, (b) review, and (c) recommend. This involved multiple screenings of all willing older patients in the facility. Staff screened patients for fall history and risk factors. They also screened for modifiable fall risk factors, such as gait, lower body strength, muscle tone, and the patient's ability to function in their environment. Screening also involved an assessment for postural hypotension by checking supine and standing blood pressure (BP). Finally, the staff assessed current medication to check for fall-risk medications, using the "stop, switch, or reduce" directions from the STEADI program and changing the dosage of psychoactive medications when possible.

Staff responsible for the collection of fall data were nursing staff and nursing students at the ALF. Staff de-identified the data regarding patients' risk for falls using the Stay Independent checklist, which asked a series of questions about each patient's fall history, their concerns about falls, and signs of depression, and supplied this data to the DNP. The nursing staff also reviewed, assessed, and documented the medications being taken by participants with special attention to medications that can put elderly patients at

risk for falls (e.g., antipsychotics, mood stabilizers, antidepressants, opioid analgesics, anticholinergics, and antihypertensives), with the intent of review for possible medication changes. The SAFE medication review tool was used for this assessment. The TUG gait-agility test was administered by the nursing staff and on-site nursing students. TUG documents a patient's ability to get up from a chair, walk 10 feet, and return in less than 12 seconds (Jung et al., 2014). In addition, seated and standing BP readings were evaluated to identify those with orthostatic hypotension.

Thirty days after the end of the fall reduction program, staff de-identified fall data and compiled it alongside the prior 12 months of fall data. The data provided were analyzed and synthesized. The reduction in fall rate supported the need for the STEADI program to close the gap-in-practice at this facility and improved the safety of the elderly who resided there.

Significance

Fall reduction is important because unintentional falls are a major cause of morbidity and mortality in the geriatric population (Alamgir et al., 2012). According to the Centers for Disease Control and Prevention (2016), injuries related to falls are the leading causes of disability and death in the elderly, and they place great socioeconomic burdens on the patients, their families, and society at large. Falls among older adults cost the United States healthcare system approximately $31 billion each year (Centers for Disease Control and Prevention, 2017). Reducing the incidence of falls in the geriatric population is a significant and challenging practice problem (Alamgir et al., 2012).

As baby boomers age the number of elderly individuals in the United States will increase, as will the number of injuries due to falls. According to the United States Census Bureau (2017), the 43.1 million Americans ages 65 and older are projected to almost double by 2060. In 2008, the Centers for Medicare Services and State Medicaid office (CMS) began stopping payment for the treatment of preventable incidents such as fractures, dislocations, and intracranial injuries resulting from falls during a patient's hospitalization or skilled nursing facility stay (Centers for Medicare Services and State CMS, 2015). The CMS also implemented a 1% reduction in Medicare payments for hospitals scoring in the top percentile for the number of harmful conditions occurring to inpatients during hospitalizations, such as falls (National Council on Aging, 2017).

Due to the increasing number of individuals who are 65 years of age and older, and those residing in ALFs, it is important that researchers work to increase knowledge and provide the best evidence-based practices to address fall reduction in the ALF. To date, there is a large amount of high-level research evidence, and national guidelines support using fall assessment tools and exercise programs for fall prevention to address the needs of individuals residing in residential care facilities (Fielding, McKay & Hyrkas, 2013). These guidelines are not usually carried out in ALFs, though at the ALF in this study, they were carried out by nonmedical staff that have not been properly trained and did not understand the importance of the assessment tools. The guidelines were performed in a random manner and not as a fall reduction program. The nursing staff decided to implement STEADI. The significance of this project is that it has the potential

to prevent falls in the elderly living in ALF facilities, lowering morbidity and mortality, and potentially saving society millions of dollars in health care costs.

It is also significant to note that this project may impact not only the patients at the study's primary ALF, but also other stakeholders, such as family members, the nursing staff at the ALF, nursing students at the ALF, and administration staff. As the project was implemented, staff ensured that all stakeholders were educated in the process of fall reduction, which impacted how they viewed fall reduction. It improved their knowledge and helped them feel like a significant part of improving the safety of the ALF residents. I also kept them updated as outcomes were evaluated.

The contribution of the doctoral project to nursing practice was that it added to the knowledge base of the nursing staff involved in the project. As this staff moves through their nursing careers, they will, in turn, be able to impart this information to the additional nursing staff they come in contact with. Since there were nursing students in placement at the ALF, they also benefited from the fall reduction outcome education, which is not normally a part of their core curriculum.

There is also the potential transferability of this doctoral project to other ALFs. These project outcomes can easily be achieved in other facilities that lack a fall reduction program. The project also provided an evaluation of the tools developed for tracking data, which will assist facilities that do not yet have tools, such as an EMR system, thereby making the implementation and tracking of data possible. Additionally, there are potential implications for positive social change in that the study can improve community

safety in facilities where elderly residents are currently at risk because of the lack of such a program.

Summary

Falls represent a substantial threat to the aging population and remain a leading cause of morbidity and mortality in the elderly (Mion, 1998). This doctoral project evaluated an evidence-based fall reduction program at an ALF that previously had no fall reduction program. Additional details of this doctoral fall reduction evaluation are discussed in Section 2, which include the background and context of this doctoral fall reduction evaluation project, details on the theoretical framework, the relevance of this project to nursing practice, the local background and context of this project, and the roles of the DNP student and the project team in the facility.

Section 2: Background and Context

Introduction

Unintentional falls are a major cause of morbidity and mortality in the geriatric population (Alamgir et al., 2012). According to the Centers for Disease Control and Prevention (2016), injuries related to falls are the leading causes of disability and death in the elderly. Additionally, the incidence of falls progresses as the population ages and places a greater socioeconomic burden on families (Kamler, 2008). As stated previously, patients 65 years and older who have sustained a fall, with or without injury, may experience increased levels of fear, anxiety, and weakness, as well as a possible loss of independence (Soriano, 2007). Reducing the incidence of falls in the geriatric population is a significant and challenging practice problem (Alamgir et al., 2012). The target population for this project is a group of elderly individuals who live in an ALF. By focusing on reducing falls in this elderly population, this project positively impacts the quality of life in an environment where a large population of seniors reside.

Literature review

Concept, Models, and Theories

This DNP project is built on the self-efficacy theory. Bandura (1977) described the self-efficacy theory as one in which "hypothesized expectations of personal efficacy determine whether coping behavior will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and aversive experiences" (p. 191). In the case of this project, the theory can be used to posited that, if elder patients

think they can assist themselves in preventing falls, they are more likely to initiate behaviors that prevent falls and may sustain these behaviors for a longer period if they expect they will be successful. This is one reason the fall reduction interventions were implemented as an ongoing program instead of implemented as episodic actions. When applying the self-efficacy theory to fall reduction, it is important to remember that, according to Bandura, reinforcement and activity repetition are important for developing mastery.

The self-efficacy theory was also a relevant theory in terms of falls and fall-related injuries because it suggests that individuals can decide if they can overcome their situation. A self-efficacy approach can improve physical performance and health-related quality of life, which then supports the role of psychological factors in these areas (Stretton, Latham, Carter, Lee, & Anderson, 2006). When caring for patients who have acquired a fall-related injury, psychological effects such as depression and the fear of falling may hinder the healing process (Lane et al., 2014). This complex psychological problem, the fear of falling, is due to "low perceived self-efficacy at avoiding falls during essential nonhazardous activities of daily living" (Lane et al., 2014, p. 297).

As individuals age, they tend to perceive that their abilities have declined and they are no more self-efficient. This fear results in degradation of self-confidence, which, in turn, leads to more incidence of falls. Therefore, there is a need to take steps and help the elderly overcome such perceptions. By changing perceptions regarding self-efficacy at an older age, it is possible to reduce the fear of falling and, thus, reduce associated monetary

costs. This perception can be changed by balance training, which mainly focuses on an individual's self-efficacy. While conducting such training, it is imperative to note that self-efficacy is mainly derived from previous performance accomplishments.

When studying falls, researchers can use data to provide an explanation for each fall, as well as possible interventions that can help the elderly population reduce their risk of falls. Bandura (1977) recognized that learning from differential outcomes is a special case of observational learning in which appropriate behavior is gradually learned from observing the effects of one's own actions rather than the actions of others.

Additionally, according to Lev (1997), increased self-efficacy is linked with increased adherence to treatment, increased self-care behaviors, and decreased physical and psychological symptoms. The advanced practice nurse is in an excellent position to give feedback, and this may help support patients' self-efficacy. Evaluating a fall reduction program and applying the self-efficacy theory to outcomes will help determine the success or failure of the measures implemented and, ultimately, the reduction of fall incidents. Increases in self-efficacy should show decreases in fall incidents.

Application of Self-Efficacy Theory

The application of the self-efficacy theory into the project setting required the facility staff to assess the participants psychosocial status regarding their wants, desires, and views on their ability to prevent falls. Delbaere, Close, Brodaty, Sachdev, and Lord (2010) showed how the concerns, beliefs, and negative views concerning falls in elderly adults (both elderly adults who have experienced a fall, and those who have not) resulted

in mobility restrictions. Researchers concluded that falls are directly led by affective-cognitive variables, such as being concerned about falls (Delbaere et al., 2010). A 30-day postimplementation, face-to-face, descriptive survey with the participants of the program allowed nursing staff to evaluate the participants' self-efficacy in the fall reduction exercise program. Gathering data on the patients' feelings towards the program enabled staff to identify which participants required more emotional and psychosocial support in the multifactorial fall reduction program. The fall reduction program incorporated exercises in coordination, strength, agility, and balance, along with cardiovascular exercises and regular stretching exercises (Robertson et al., 2002). Bandura (1977) recognized that efficacy expectations vary on several dimensions with important performance implications.

Applying the self-efficacy theory at the beginning of the program gave the staff and other members of the program an understanding of the concerns participants may have had concerning the fall reduction interventions. For example, if participants were concerned that the reduction of certain medications would not help to reduce falls, education and a review of evidence-based findings helped them comprehend the truth. Gaining an understanding of patient concerns was a benefit to the team because it allowed us to address concerns and ease the participants' minds, leading to better results.

Relevance to Nursing Practice

Falls can cause significant injury but can also cause increased anxiety, fear, social isolation, and psychological trauma. At least 30% of individuals 65 years of age and older

experience one or more falls each year, and this proportion increases to 40% after the age of 75 (Schwenk et al., 2012). Falls among older adults account for 60% of fall-related injuries, and fractures are the most frequent injuries reported (Jung et al., 2014). When a resident sustains a fall, there are multiple complications from fractures, including immobility, weakness, constipation, reduced fitness, social isolation, reduced quality of life, and even death (Fitzgerald et al., 2016). About $31 million is spent annually in the United States on direct medical costs related to fall injuries, with an average cost of over $30,000 per hospital treatment (Centers for Disease Control and Prevention, 2017). As nurses tend to spend a large amount of time with patients or with the elderly, they should be well trained to cope with fall incidents. Appropriate training of nurses will not only ease elderly people's and patients' fears of falling but also decrease the probability of a fall, look after elderly in a better way but can surely cause a significant decline in medical costs due to falls. Therefore, nurses should be trained to assist elderly people with their balance and provide immediate aid in case they fall to reduce the severity of the fall. Such a reduction in frequency and severity of falls would also reduce overall monetary costs of treating patients who have incurred an injury due to a fall. Hence, fall reduction has great relevance within the nursing profession.

Nursing Obligation

McCurry, Revell, and Roy (2010) highlighted that the nursing profession has an obligation to provide care to its patients, as well as to contribute to the good of society. Use of evidence-based interventions that can help decrease falls in the geriatric

population has the potential to benefit both patients and society. Falls represent a substantial threat to the aging population and remain a leading cause of morbidity and mortality in the elderly (Soriano, 2007). Falls can cause significant injury, but can also cause increased anxiety, fear, social isolation, and psychological trauma (Soriano, 2007). The Centers for Disease Control and Prevention (2017) reported that each year, 2.8 million older people age 65 and older are treated in hospital emergency departments for fall-related injuries. Both geriatric patients and hospitals are affected by the number of falls experienced by the U.S. population. Geriatric patients incur serious and often fatal consequences after a fall (Shubert, 2011). Broken bones, head injuries, an increased risk for falls, and a new fear of falling are common outcomes after an elderly patient's first fall (Soriano, 2007). Falls, especially in the geriatric population, may result in serious physical and psychological injuries. The impact of elderly falls is not only related to inconvenience for the person who fell but also accompanied by large financial costs. Thus, adequately assisting patients, especially elderly ones, nurses not only benefit that person but also help to reduce healthcare costs, particularly those associated with falls.

While patients suffer both physically and mentally post fall, hospitals suffer financially when treating patients for fall injuries. About $31 billion is spent annually on direct medical costs related to fall injuries, with an average cost of over $30,000 per hospital treatment (Centers for Disease Control and Prevention, 2017). Falls are one of the seven conditions with the greatest spending growth in the U.S. healthcare system (Dieleman et al., 2016).

Clinical Research on Falls in ALFs

A search in the National Guideline Clearinghouse, the ProQuest Nursing and Allied Health, the Cochrane Central Register of Controlled Trials, the Cochrane Database of Systematic Reviews, the Registered Nurses' Association of Ontario, and the Medline databases found no articles regarding fall reduction in the ALF setting. One article was found in the CINAHL database, though it was an exercise-only project. Additionally, only one article was found in the ProQuest Health and Medical Collection database, and it involved balance training only. It is, therefore, important to officially confirm that an evidence-based fall reduction program implemented in an ALF will reduce the incidents of falls.

Falls can leave victims injured, debilitated, and dependent, and can increase their fear of future falls (Kamler, 2008). The consequences of falls in the elderly also extend to the psychological and social (Stenhagen et al.,2014). With falls affecting both physical and psychological health in the geriatric population, it is important for healthcare providers to promote interventions that reduce their patients' risk and rate of falls. These interventions are of the utmost importance in the ALFs, where there are many active geriatric residents with multiple risk factors for falls

In 2016, researchers conducted a study testing the Tai Ji Quan: Moving for Better Balance fall prevention intervention (Booth et al., 2015). Studies showed the implementation of this evidence-based fall prevention program decreased the total amount of falls in senior communities by 49% (Fitzgerald et al., 2016). Also in 2016,

Stenhagen et al. (2014) found that educating clinical staff, specifically nurses, on evidence-based fall reduction interventions helped to reduce patients' risk for falls. The implementation of education within a clinical setting helped nursing staff to better evaluate their patients' fall risk, properly respond to barriers that reduce intervention, and use strategies to successfully implement evidence-based programs within the healthcare setting. Rubenstein and Josephson (2006) found that "a large portion of falls and fall injuries in older people is due to multiple risk factors, many of which can be modified or eliminated" (p. 820). Thus, when designing intervention strategies, one must ensure that such strategies are sustainable, feasible, and cost-effective. Clinical research reveals that many effective intervention strategies involve fall assessment from multiple aspects and considering all dimensions. The goal of this study is to provide an evidence-based program which involves information gathering such as local background and context. An evidence-based program will be based on factors such as research, data, and accurate record keeping—all of which provide evidence that the program is effective.

Local Background and Context

The ALF where this evidence-based fall reduction project was evaluated did not previously have a fall reduction program. As pointed out in Section 1, unintentional falls are a major cause of morbidity and mortality in the geriatric population (Alamgir et al., 2012). It is precisely because this is such an important issue that the evaluation of a fall reduction program was chosen for this project. Additionally, the DNP student currently works at the ALF at which this project was centered, in urban Southern California, and

was troubled by an increased number of fall incidents without any evidence of a concerted effort at an evaluation of the situation. It was especially disconcerting because in one weekend at the ALF, five residents were sent to the hospital due to falls. This was an unacceptable gap in safety at an agency that is supposed to be providing a safe living environment for its elderly residents. This is why the practice-focused question for this project considered the impact of the evidence-based STEADI fall reduction program project in this ALF.

Institutional Context

The corporate company running the ALF in which this quality improvement project took place is a well known, privately held corporation established in 1946, with headquarters in Los Angeles, California. The company has a history in the movie exhibition business, was involved in a real estate investment firm and a property management firm, and in 2011 bought their first ALF with the intention of enabling the elderly to have a developmental experience in the last years of their life. Company values include:

- Excellence: “We will provide outstanding services to everyone.”
- Respect: “We feel a responsibility to treat people with fairness and decency.”
- Clock Building: “We believe in managing and building this company to last.”
- Servant Leadership: “We feel an obligation to contribute to the communities in which we operate.”

- Learning: “We believe in providing an opportunity for individuals to develop, grow and contribute.”
- Compassion: “We care about people.”

The corporation’s purpose is to provide places for people to flourish. They believe that every human being has something unique to express. Flourishing is the process of living into one’s unique potential and expressing oneself fully. The company seeks to provide a continuum in which the company is constantly building knowledge, systems, and skills to improve the quality of care for their residents and the growth of their staff.

The Local Facility

The practice setting for this doctoral project was an assisted living facility that houses patients 65 years of age and older. The facility has a census that fluctuates from about 88 to 100 residents. There were recently numerous cases of falls that concerned the community’s residents and administration. This facility collected incident reports for falls, and the information was provided to the management team. However, management did not compile reports or communicate the findings to the facility’s caregivers. ALFs are known as an alternative to skilled nursing facilities (SNF), which care for elders with multiple chronic illnesses; they function at a higher level than SNF residents, but are still not able to live alone. However, because they have chronic illnesses, with multiple medications required for treatment, ALF residents are at a higher risk for falls than general population residents.

Due to the high risk for falls in these facilities, it would make sense for the government to require ALFs to have fall reduction programs. In California, the Department of Social Services, Community Care Licensing Division, licenses residential care facilities for the elderly, including the ALF where this project was implemented. There are many regulations addressing activities in the ALF, such as which chemicals to use to clean hazardous spills properly, but there are no regulations requiring facilities to have a fall reduction program. Therefore, there are no regulations applicable to this doctoral project.

Role of the DNP Student

The DNP student currently manages residents at the ALF where the project was implemented. The main reason to evaluate a fall reduction program at the ALF was the facility's concern over the high number of falls at this facility. The safety of residents at this facility was at risk due to the lack of a fall reduction program. I was responsible for gathering and analyzing literature related to fall reduction within assisted living communities with residents over the age of 65. Various facilities with current fall management processes were observed, as was the effectiveness of their policies and strategies for fall reduction. I was also responsible for the selection of the fall reduction program this facility chose to implement, and for evaluating the outcomes of the project. I also trained the staff in the collection of de-identified fall reduction implementation data and fall incident data.

Role of the Project Team

The project team consisted of the Administrator, the Director of the Wellness Center at the facility, the Wellness Coordinator, nursing staff leadership, and the DNP student. This team ensured that the quality improvement project was successfully implemented and carried out as soon as IRB approval from Walden was obtained. The Executive Director helped to ensure that we had corporate approval when we were ready to begin the project. The project team assisted in making sure that the project did not interfere with patient care and helped to motivate staff and patients to participate in the program. The DNP and facility goal was to evaluate a fall reduction program within the ALF. The facility nursing staff implemented the STEADI program as previously described.

Summary

Unintentional falls are a major cause of morbidity and mortality in this geriatric population, even though the current rate of falls was unknown at the time. The evaluation of the fall reduction program's outcomes was therefore essential. Anecdotal reports, including the one weekend where five residents were sent to the hospital due to falls, showed that falls were a major problem at the project ALF. This project is relevant to nursing practice and vital to the safety of the residents who live in the project ALF. It is also a passion of this DNP student because due to the impact of falls on residents in the project ALF. The ALF staff implemented the STEADI components, and the DNP student

took the lead as the program evaluator. It was also the role of the DNP student to collect and analyze the de-identified data for this project and to interpret the outcomes.

Section 3: Collection and Analysis of Evidence

Introduction

Falls in the elderly are a preventable health issue according to the Centers for Medicare and Medicaid Services (2015). Falls cause increased physical and emotional consequences for patients, as well as increased financial costs (Albert et al., 2014). They represent a substantial threat to the aging population and remain a leading cause of morbidity and mortality in the elderly (Bandura, 1977). They do not only cause significant injury, but also result in increased anxiety, fear, social isolation, and psychological trauma in the elderly (Fielding et al., 2013). At least 30% of individuals 65 years of age and older experience one or more falls each year, and this proportion increases to 40% after the age of 75 (Schwenk et al., 2012). Falls among older adults account for 60% of fall-related injuries, with fractures being the most frequent injuries reported (Jung et al., 2014).

When a resident sustains a fall, there are multiple complications from fractures, including immobility, weakness, constipation, reduced fitness, social isolation, reduced quality of life, and even death (Kamler, 2008). An estimated $31 million is spent annually in the United States on direct medical costs related to fall injuries, with an average cost of over $30,000 per hospital treatment (Centers for Disease Control and Prevention, 2017). Section 3 of this paper explores the primary practice-focused question in this doctoral project, the evidence surrounding the issue, and the analysis and synthesis of the data collected.

Practice-Focused Questions

The project ALF for this doctoral project did not have a previous fall reduction program. Additionally, the administration at the ALF did not keep a statistical record on fall rates, so they did not know the facility's actual fall rate or the extent of the problem. Over one weekend, however, five patients were sent to the emergency room due to falls. This illuminated a gap in the healthcare practice at this facility and highlighted the safety risk this posed to the elderly residents who reside there. The ALF therefore decided to start a fall reduction program. I chose to evaluate the program outcomes due to the facility's previous lack of data collection and fall reduction evaluations. The practice-focused question for this project was: "How will the implementation of the evidence-based STEADI fall reduction program in an ALF in urban Southern California impact the fall rate among the elderly residents, as measured by a 30-day post-implementation evaluation of fall rates and compared to the previous 12 months?"

The purpose of this DNP quality improvement project was to evaluate the outcomes of an evidenced-based fall reduction program in an ALF. The project facility's implementation of the STEADI program aligned with the project-focused question for this DNP project. Additionally, the outcomes for this Southern California ALF were similar to other fall reduction projects researched by this DNP student.

Sources of Evidence

A review of the literature supports the claim that falls are a major problem for the elderly in the United States. The Centers for Disease Control and Prevention (CDC) have

several publications that present statistics on falls and their cost for our communities and our healthcare system. These publications include *Older Adult Falls* (CDC, 2017), *Injuries and Falls From Immobility* (Centers for Medicare and Medicaid Services, 2017), and the *United States Population Census* (United States Census Bureau, 2017). Falls among the elderly are three times more frequent for those who live in institutional settings than those who are living in the community (Crilly et al., 2013). Furthermore, falls can have physical, psychological, and social consequences; can leave these victims injured, debilitated, dependent; and can increase their fear of future falls (Stenhagen, et al., 2014).

I also used the Walden University Library and resources from the American Nurses Association (ANA) to collect relevant studies. Walden University provides access to research databases like Medline, CINAHL, Cochrane Library, Meta-synthesis, and PubMed. The ANA provides annual reports, an online library, and updated nursing information. Several studies have been conducted to find the best evidenced-based practice to reduce falls in the geriatric population residing in senior communities, including ALFs. Additionally, two different research groups, Rubenstein and Josephson (2006), and Fitzgerald, Fuzhong, and Harmer (2016), have conducted evidenced-based studies of interventions implemented to help prevent falls in the elderly population.

The National Council on Aging (2017) provided a comparison table of outcomes for evidence-based programs. There were several programs utilizing exercise-only programs. Shubert (2011) found that for individuals living in skilled facilities, such as an

ALF, fall reduction interventions that were not multifactorial and based only on exercise or physical therapy had no significant protective effects. Sometimes, they even resulted in more falls (Evans et al., 2015).

Thus, the relevant literature is suggesting that elderly fall incidents in the United States are increasing. This is a big problem not only for elderly persons themselves but also for healthcare professionals and public funds which must pay the bill for fall-related injuries. Therefore, it is critical that healthcare professionals implement calculated intervention strategies as soon as possible to prevent the rate of fall-related injuries from increasing any more than it already has. Some steps have already been taken in this regard, as emphasis has been placed on implementing evidence-based programs. This project will involve investigating an evidence-based program, as well as reviewing previously conducted evidence-only based programs.

Exercise-only based programs reviewed for this project include A Matter of Balance, the Otago Exercise Program, Stepping On, Tai Chi, and the YMCA Moving for Better Balance program. These programs were designed to improve strength, mobility, flexibility, and balance for enhanced overall physical health and better functioning in daily activities but did not make use of other interventions for other factors, like medication level and BP, that are critical for those living in an ALF.

Some programs like the 6Ps Fall Prevention Program were from insurance companies and not multidimensional, while other programs, like Community Aging in Place—Advancing Better Living for Elders (CAPABLE), were designed to be delivered

at home and were not appropriate for ALF residents (Buckinx et al., 2015). Additional programs like the Fit & Strong program were evidence-based physical activity and behavioral change interventions, geared to older participants with lower extremity joint pain and stiffness related to osteoarthritis (Roman et al., 2015). While these may have had positive outcomes for some residents at the ALF, the outcomes would not have been equal to those of the multidimensional program implemented at the project ALF.

Additionally, there are several interventions which the National Institute for Health and Care Excellence (2013) did not recommend, not because there is strong evidence against them, but because there is insufficient or conflicting evidence supporting them. These interventions include low-intensity exercise combined with incontinence programs, untargeted group exercise, cognitive and behavioral interventions, and referral for correction of visual impairment (Muir-Hunter, & Wittwer, 2016).

The literature on fall intervention programs provides much insight into the issue, but there is no clear message regarding the best approach to preventing such falls. Researchers must identify the most effective intervention programs to prevent falls. Effective fall-prevention programs include education, environmental modifications, exercise, and risk assessment and management. Healthcare professionals must combine these programs with evidence-based practices. The same approach can be applied to evaluate the outcomes of the STEADI program at the project ALF. Data from the CDC may enhance this evidence-based program.

For this doctoral project, I evaluated the outcomes of the STEADI program at the project ALF. The CDC (2017) recognized the STEADI program as an evidence-based fall reduction program because it was multidimensional. Additionally, it provided all the materials necessary for implementation, making it convenient for the ALF (CDC, 2017). The multidimensional aspects of the program were focused on a broad range of activities, as evidenced by the STEADI program's Algorithm for Fall Risk Screening, Assessment, and Intervention (see Appendix H). The algorithm is a comprehensive multifactorial risk assessment that includes the following steps:

- Review the *Stay Independent* brochure (see Appendix C).
- Fall history.
- Physical exam, including postural dizziness and postural hypotension.
- Medication review.
- Cognitive screening.
- Feet and footwear check.
- Use of mobility aids.
- Visual acuity check.

Interventions for high-risk individuals are also multifactorial and include the following steps:

- Educate the patient.
- Start taking Vitamin D +/- calcium.

- Refer the patient to PT to enhance functional mobility, and to improve strength and balance
- Manage and monitor hypotension.
- Manage medications.
- Address foot problems.
- Optimize vision.
- Optimize home safety (CDC, 2017).

The first four assessments and reviews were chosen by the ALF for implementation. Research supported their use of a multidimensional approach to reducing falls (National Institute for Health and Care Excellence, 2013). Research by Day, Donaldson, Thomas, and Thompson (2014) also supported this; they stated that the ranked order of interventions, from most to least suitable for integration, were (a) multifactorial risk-assessments and interventions, (b) multicomponent group exercise, (c) medication review, (d) occupational therapy-based home safety, (e) home-based exercise, and (f) first eye cataract surgery. The assessments the ALF chose to implement included:

- Fall risk assessment using the Stay Independent checklist,
- Medication review using the SAFE medication review tool,
- The TUG gait-agility test, and
- BP screens for the detection of postural hypotension.

Interventions the ALF used for their program included educating patients about fall risks and reduction techniques using the STEADI Pocket Guide to Preventing Falls in

Older Patients. They also included managing medications using the STEADI handout *Medications Linked to Falls*, and teaching exercises to enhance functional mobility and to improve strength and balance using the *Chair Rise* STEADI handout. They also assisted residents as they made needed changes to their environment, such as rearranging furniture and moving power cords; recommended the use of assistive devices such as a cane; and helped residents obtain items like over-the-toilet commodes. Finally, project implementation included educating residents about hypotension using the STEADI brochure *Postural Hypotension*.

Once the ALF had implemented the STEADI program and residents were involved for a minimum of 60 days, de-identified data was collected by the ALF staff on the falls that occurred 30 days after the program was initiated. I then analyzed and synthesized the data to determine if the program outcomes showed that the program was successful in reducing fall rates.

Timeline for the Implementation and Collection of Data

The project outcomes evaluation was completed following the timeline below:

1. Week 1—IRB approval obtained 2/19/18 from Walden.
2. Week 1—I notified ALF director of Walden IRB approval.
3. Week 2—I explained the evaluation component of program data to ALF staff.
4. Week 2–3—ALF nursing staff explained the evaluation component of the project to residents and their families at the ALF.

5. Week 2–3—ALF nursing staff obtained resident consent and agreement to participate.
6. Week 3–4—ALF staff de-identified prior 12 months of fall data.
7. Week 4—ALF wellness director and I reviewed de-identified screening data of residents for risk factors utilizing the STEADI data which included: Stay Independent checklist, SAFE medication review tool, the TUG gait-agility test, and screening for postural hypotension.
8. Week 4–5—I synthesized and analyzed de-identified screening data.
9. Week 5—Nursing staff completed face to face self-efficacy descriptive survey with participating residents.
10. Week 6—I evaluated the participant's efficacy regarding the fall reduction program. De-identified data included how the individuals felt towards the fall reduction program and how likely they were to continue fall reduction activities.
11. Week 6–7—I analyzed and synthesized 12-months-prior de-identified data with the 30-day post-program identified data outcomes.
12. Week 7—I disseminated project findings to ALF staff and director.
13. Week 8—I submitted project to my project chair (see Figure 1).

ACTIVITY	FALL REDUCTION OUTCOME EVALUATION TIMELINE							
	WEEK							
	2/19/18	2/26/18	3/5/18	3/12/18	3/19/18	3/26/18	4/2/18	4/9/18
Walden IRB approved.								
DNP student notified ALF Director of IRB approval.								
DNP student explained project to ALF staff.								
ALF nursing staff explained evaluation project to residents.								
ALF nursing staff obtained residents' consent.								
ALF staff de-identified prior 12 months of fall data.								
ALF wellness director and DNP student reviewed de-identified screening data.								
The DNP student synthesized and analyzed de-identified screening data.								
Nursing staff completed face to face self-efficacy descriptive survey.								
DNP student analyzed self-efficacy data.								
DNP analyzed and synthesized de-identified 12 months prior data with the 30-daypost-program outcomes.								
Dissemination of project findings to ALF staff and Director.								
DNP student submitted project to Chair.								

Figure 1: Fall reduction outcome evaluation timeline.

Participants, Procedures, and Protections

The main participants in the DNP study were the ALF nursing staff. Their consent to participate was obtained, and they were trained to use the evidence-based fall prevention program. The duty of the ALF nursing staff was to compile the fall records for the previous 12 months among the residents, and the falls during the 30-day period post-implementation, focusing on the residents who are the target population for the fall prevention program. The nursing staff were made aware of the specific data needed for the evaluation of the fall prevention program, and they provided the required data for the risk factors, utilizing the STEADI data components, for analysis by the DNP student and the ALF Wellness Director.

After the DNP project was approved by the committee and the IRB approval was obtained from Walden, the nursing staff was educated regarding the evaluation component of the project, how to interface with patients, and their role in the collection of de-identified data. Nursing staff understood the need to explain participation in the project to residents and to obtain resident consent to participate

Protections and Ethical Considerations

In the development of any healthcare evaluation project, one of the most important areas to consider is ethics. In order to evaluate the outcomes of the fall reduction program, the residents' rights had to be considered a priority. The residents were offered the choice of whether to participate in the evaluation component of the program. No individual was coerced into participation, nor were they excluded from

program interventions if they chose not to participate in the outcomes evaluation project. Informed consent was obtained from the residents by the nursing staff. If the individual was unable to give full consent because of any cognitive or physical impairment, consent would be obtained from their power of attorney or legal guardian. However, all participating residents were able to give consent themselves. Use of a consent form made sure the residents were made fully aware of the evaluation component of the project, project outcomes, potential benefits, and the purpose of the program (see Appendix A). This further included an explanation of the confidentiality of their information and gave them the right to refuse or rescind participation at any time during the project.

Of the 78 residents at the ALF at the start of the project outcome evaluation, 62 consented to participate. Several residents were excluded, as they were deemed unable to participate in the fall reduction component of the ALF program; four were wheelchair bound, three were bedbound, six were in a hospice program, and three were deemed too cognitively impaired to participate.

ALF staff members were also included in the project's ethical considerations and were given the right to refuse to participate. Participation and the collection of data would increase their workload for a short time. They were provided with information regarding the confidentiality of their participation throughout the program. They were also educated regarding the benefits of determining the outcomes of the fall reduction program they had implemented. All lead nursing staff chose to participate.

Analysis and Synthesis

Analysis and synthesis of the data was done by the DNP student. A Microsoft Excel spreadsheet was developed by the DNP student to collect de-identified data, since the ALF did not have an EMR or similar system capable of collecting data for analysis.

Historical data regarding falls in the ALF for the previous 12 months was collected and de-identified by the ALF staff; this included the number of residents, the number of falls, and the percentage of residents who fell. The post-implementation data was also collected by the nursing staff. It was the responsibility of the DNP student to ensure that data was collected for all participants and that no data was missing. Missing data was researched by nursing staff and forwarded to the DNP student prior to analysis. The procedures for submitting de-identified data were discussed with the project team and required input from nursing staff as to the best means for submittal. Several residents were deemed unable to participate due to physical or mental limitations, and their information was not included.

Each resident was assigned a unique numerical identifier in order to anonymize their information. The ALF nursing staff entered this number on each resident's source documents, created a list of resident names and assigned a numeric number, and then transferred information from each source form to the Excel document. This allowed the DNP student to perform analysis through the Excel document, as opposed to individual source documents, and made de-identification much easier. It also made it easier for nursing staff to go back to original source forms when there was a question about missing

or incorrect data in the Excel document. ALF nursing staff maintained control of all source documents, including the list linking resident names with their unique numeric identification.

The de-identified data included risk assessment results; whether residents were categorized as high, medium, or low risk; types of interventions the staff helped residents implement; the self-efficacy information of residents after participating in the program; and the incidents of falls for 30 days after 60 days in the program.

Descriptive analysis procedures were carried out on the quantitative data obtained, including the number of residents, the number of falls, risk factors for each resident, and the percentages rate of falls among the elderly residents. The post-program implementation fall rate was compared with the fall rate in the 12 months prior to the program. At the end of the data analysis, the results were synthesized to determine the significance of pre- and post-fall rates with regard to the practice-focused question. Recommendations on the continuation or modification of the program were made and discussed with the project team.

Summary

Fall prevention is a widely studied subject. Research shows that the majority of fall reduction programs are implemented either in the community or in hospital settings. The purpose of the DNP project was to evaluate the outcome of the STEADI program implemented by the ALF. The procedure used in this project to address the practice-focused question involved gathering quantitative data, comparison of pre- and post-

implementation data on fall rates, and synthesis of data to verify outcomes. The analysis and synthesis of data determined that the practice-focused question was positively confirmed. Section 4 of this paper discusses findings and recommendations.

Section 4: Findings and Recommendations

Introduction

Increasing unintentional falls in the geriatric population is the major cause of mortality and morbidity among this group (Alamgir et al., 2012). Injuries resulting from these falls are the primary cause of death and disability among the elderly (Czaja, 2016). There is significant literature on fall rates in institutions, hospitals, and in the community, but very few on falls in ALFs. According to Schwenk et al. (2012), at least 30% to 40% of geriatrics 65 years and above fall at least once in a year, and the percentage increases by 10% after the age of 75. These falls account for 60% of injuries involving fractures among the elderly (Jung et al., 2014). There were previously no complied records regarding falls at the project site due to the lack of a fall reduction program, lack of coordinated collection of fall data, and lack of fall analysis.

This project presents the outcomes of an evidence-based fall prevention program in the ALF. The practice-focused question raised for the project was “How will the implementation of the evidence-based STEADI fall reduction program in an ALF in urban Southern California impact the fall rate among the elderly residents as measured by a 30-day postimplementation evaluation of fall rates compared to the previous 12 months?” Evidence was obtained from the de-identified resident data collected by the ALF nursing staff. The purpose of the project was to evaluate the outcomes of the evidenced-based fall reduction program implemented by staff at the project ALF, and to verify if the program was effective in reducing falls.

The search of different databases—including ProQuest Nursing, Allied Health, National Guideline Clearinghouse, Cochrane Central Register of Controlled Trials, and Cochrane—provided numerous articles regarding fall reduction for the elderly in various institutions. However, limited information was found on the reduction of falls in an ALF setting. Therefore, it was important to evaluate the efficacy of an evidence-based fall reduction program implemented in an ALF. Quantitative data analysis techniques were used to compare the pre- and postimplementation data, to determine outcomes, and to determined the impact of the program on fall rates in the facility.

Findings and Implications

The evaluation of de-identified fall data outcomes involved a number of components. A baseline patient data form (see Appendix A) was developed by the DNP student for a retrospective gathering of de-identified data regarding fall incidents for the 12 months before the ALF implemented the fall reduction program, STEADI. Additional components of the form included each resident's risk factors. Thirty days after the 60-day program implementation, fall data was again collected by staff utilizing a similar form (see Appendix B). The components of the STEADI program included a fall risk assessment using the following:

- Stay Independent checklist (Appendix C).
- Medication review using the SAFE protocol and medication review tool.
- Medications Linked to Falls (Appendix D).
- The TUG gait-agility test (Appendix E).

- Screening for orthostatic hypotension (Appendix F).

Also, see Appendix G for the modified form used to collect data for STEADI program components.

The history of each resident's risk factors was evaluated. A de-identified history of falls for 12 months prior to STEADI implementation was tabulated from fall reports the facility kept by date and patient name. With the help of the baseline Fall Risk Assessment, nursing staff assessed the participating residents to determine their worries over falling and whether they felt unsteady when walking or standing. These residents were also screened for heart problems, cognitive problems, incontinence, depression, foot problems, and other medical problems by the nursing staff. Medications were evaluated with particular attention to the use of anticonvulsants, antidepressants, antipsychotics, benzodiazepines, opioids, sedative-hypnotics, anticholinergics, antihistamines, BP medications, and muscle relaxants. Additionally, residents' strength and gait were easily assessed through the TUG test and documented on the TUG screening form (Appendix E); in this test, the patient is asked to stand up from the seated position without using support or their arms, walk ten feet, walk back, and sit down. A timed completion of 12 seconds or greater was considered a risk factor for falling. Finally, residents were screened for hypotension using the standard definition of a systolic BP drop of at least 20 mm Hg or a diastolic BP drop of at least 10 mm Hg within one minute and three minutes of standing (see Appendix F).

At the end of the 30-day postimplementation period the residents were re-evaluated for the number of falls they had experienced, and de-identified data about interventions that had been implemented were recorded. Medication records were reviewed for modifications made during the program, looking for medications changed or discontinued. Fall reduction activities were documented, including the number of residents who participated in the exercise program, had room obstacles removed by physiotherapists, had furniture moved, received training in the use of assistive devices, were issued new assistive devices, were provided with an over-toilet commode, received education about signs and symptoms of documented hypotensive episodes, and who received education about behaviors that could prevent falling.

Components of the STEADI program, and baseline and post-program tools, were used for the evaluation of outcomes. These components and tools provided information about fall risks factors, pre- and postimplementation incidents of falls, prevention measures implemented, and outcomes. There might have been laboratory tests done for fall victims who were hospitalized in the 12 months prior to the implementation of the fall reduction program, but these tests were not readily available for this project, nor were they the focus. There were no residents hospitalized as a result of a fall in the 60 days of program implementation or in the 30 days after the program.

The goal of the outcome evaluation was to determine if the elements of the STEADI program implemented at the ALF reduced the incidents of falls among residents in the facility. This goal aligned with the mission of the parent organization. By allowing

me to conduct the outcome evaluation of their fall reduction program, the organization demonstrated that it was interested in enacting its values of excellence, respect, servant leadership, learning, compassion, and providing opportunities for individuals to develop, grow, and contribute to their communities.

The objectives of the project included the education of ALF facility staff about the outcomes of their fall reduction program, and, based on the evaluation of those outcomes, to make recommendations for fall prevention policies to be implemented at the ALF. Data was collected for the 30 days after the program implementation, and the results were analyzed and synthesized. The outcomes showed that the interventions implemented did reduce fall rates. The remainder of this chapter includes a discussion on the outcome evaluation of the implemented project and its effectiveness.

Data Interpretations

Descriptive statistics were used for the analysis of collected data regarding the fall prevention program. Data was collected for the total number of falls that occurred in the ALF for the 12 months before and 30 days after the fall prevention program was implemented. Data was also collected for fall risk factors and interventions made during the program. Of the 62 residents included in the outcome analysis, 39 (63%) had a total of 79 fall incidents altogether in the 12 months prior to program implementation. This worked out to an average of two falls each for the residents who experienced falls, with a range of one to six falls. For the project ALF, this is a monthly fall rate of 6.6 per month.

The results of the fall risk factor data collected at baseline by nursing staff is shown in Figure 2. The results showed that 38 of the 62 residents (61%) were on medications that put them at risk for falling, and 36 (58%) had a variety of medical conditions that put them at risk for falling. Additionally, 14 (22%) had TUG scores of greater than or equal to 12 seconds, and 12 (19%) had documented episodes of orthostatic hypotension.

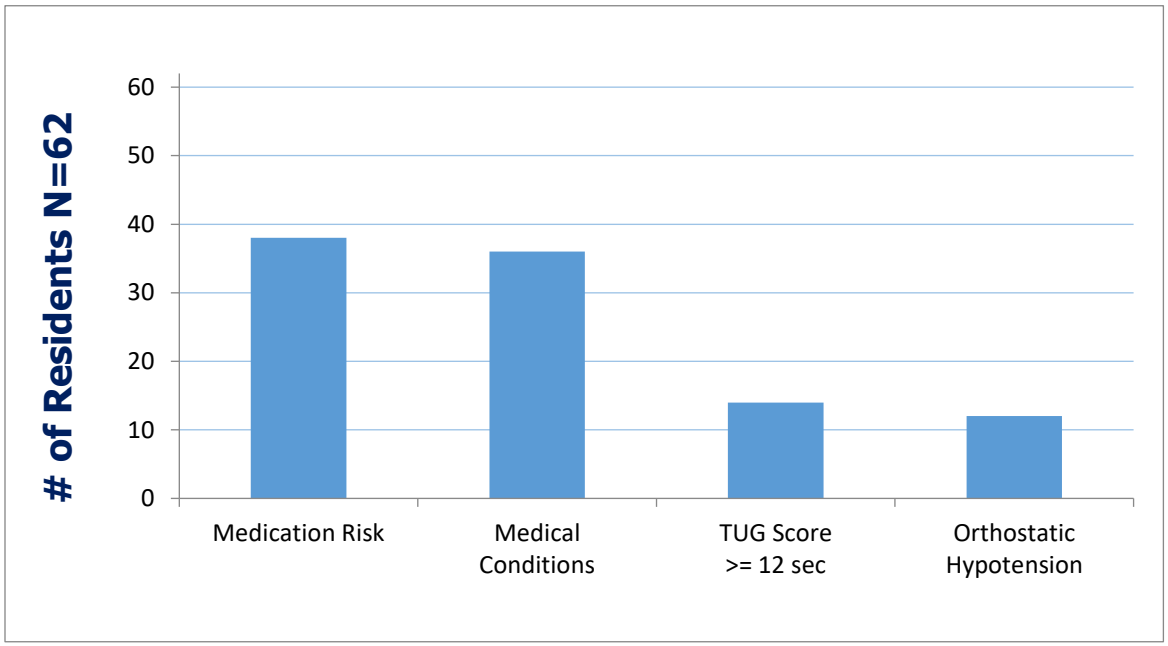

Figure 2: Risk factor data at baseline.

With the help of the STEADI Algorithm for Fall Risk Assessment and Interpretation tool (Appendix H), the residents were characterized according to high, moderate, or low risk for falling. Table 1 shows the breakdown of the 62 participating patients according to the fall risk scale.

Table 1

Resident Rating of Fall Risk

Rating	Number of residents	Percentage %
Low	29	47
Moderate	16	26
High	17	27
Total	62	100

Additionally, during and after the implementation of the program, nursing staff employed strategies from the fall reduction program specific to each resident. These strategies were implemented in order to reduce the risk of possible falls in the future. They were recorded in the resident's care plans and were utilized by all nursing and nursing assistant staff.

Intervention data was collected during the 60-days implementation phase of the program. As shown in Figure 3, the data showed that a total of 30 (76%) of the 39 patients who were taking medication determined to be high risk for causing falls had their medications either changed or discontinued while in the program. A total of 38 (61%) of the 62 participating residents were enrolled in the fall risk reduction exercise intervention, and 17 (27%) received physical or occupational therapy. An additional 13 (21%) residents had fall obstacles in their room removed or secured, such as the removal of rugs or the application of double-sided tape to the back of rugs to secure them to the floor. Seventeen (27%) had furniture moved out of pathways to reduce fall risk, nine (14%) were found to be using assistive devices such as a cane or walker incorrectly and were given training, 16 (26%) were issued an assistive device such as a cane or walker, 7

(11%) were issued an over-the-toilet commode, and 13 (21%) were provided education about orthostatic hypotension.

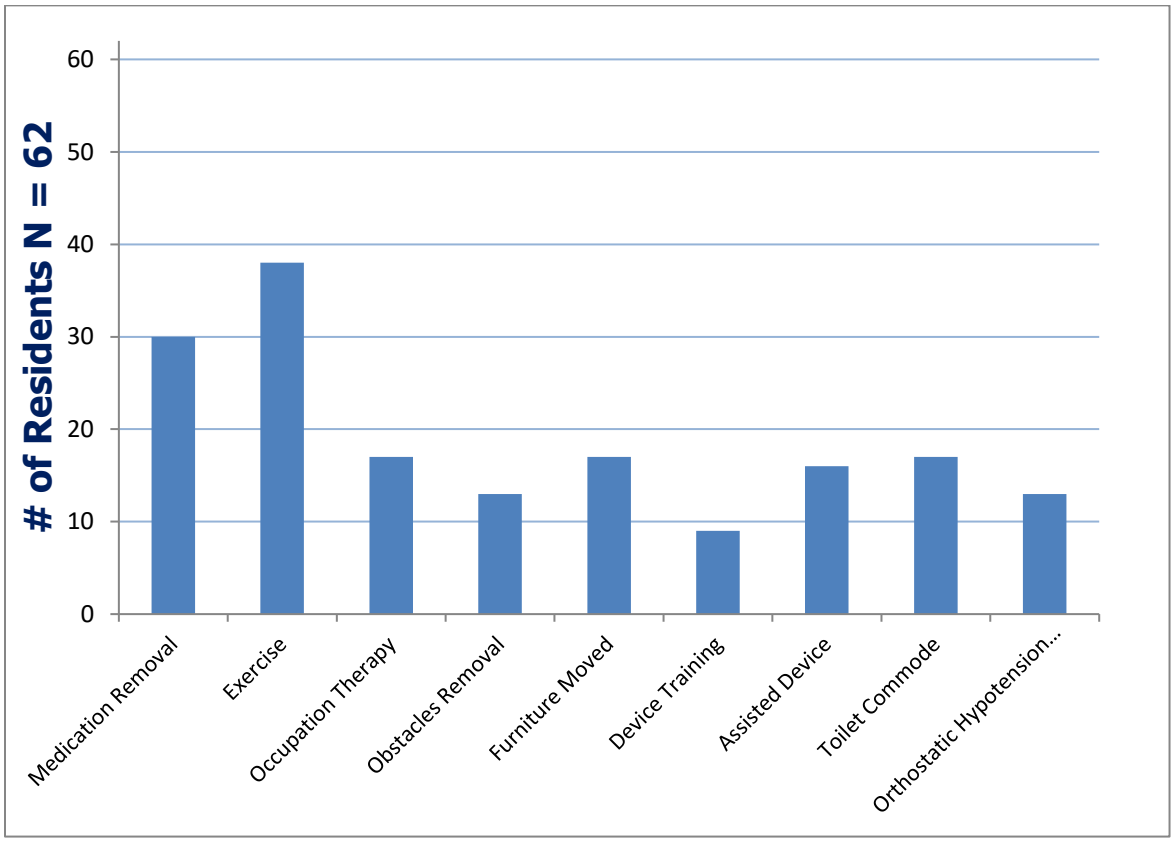

Figure 3: Intervention data collected during the 60-day implementation period.

Part of evaluating the outcomes of this project involved applying Bandura's theory of self-efficacy. The Self-Efficacy for Exercise (SEE) scale was used for this (see Appendix I). The SEE scale rates confidence using a Likert scale of 0–10, with zero being not confident and 10 being very confident. It also includes nine areas of responses that might interfere with continuing exercise. Nursing staff conducted interviews to evaluate residents for self-efficacy. Analysis of the resident interview results showed that patients ranged from mildly confident of continuing the program—with a score of 47 out

of a possible to 90—to very confident of continuing the program, with a score of 83. The average score was 69, demonstrating that the majority of the residents were somewhat confident they would continue an exercise program (see Figure 4). This was to be expected, as it is well known that continuing an exercise program is difficult.

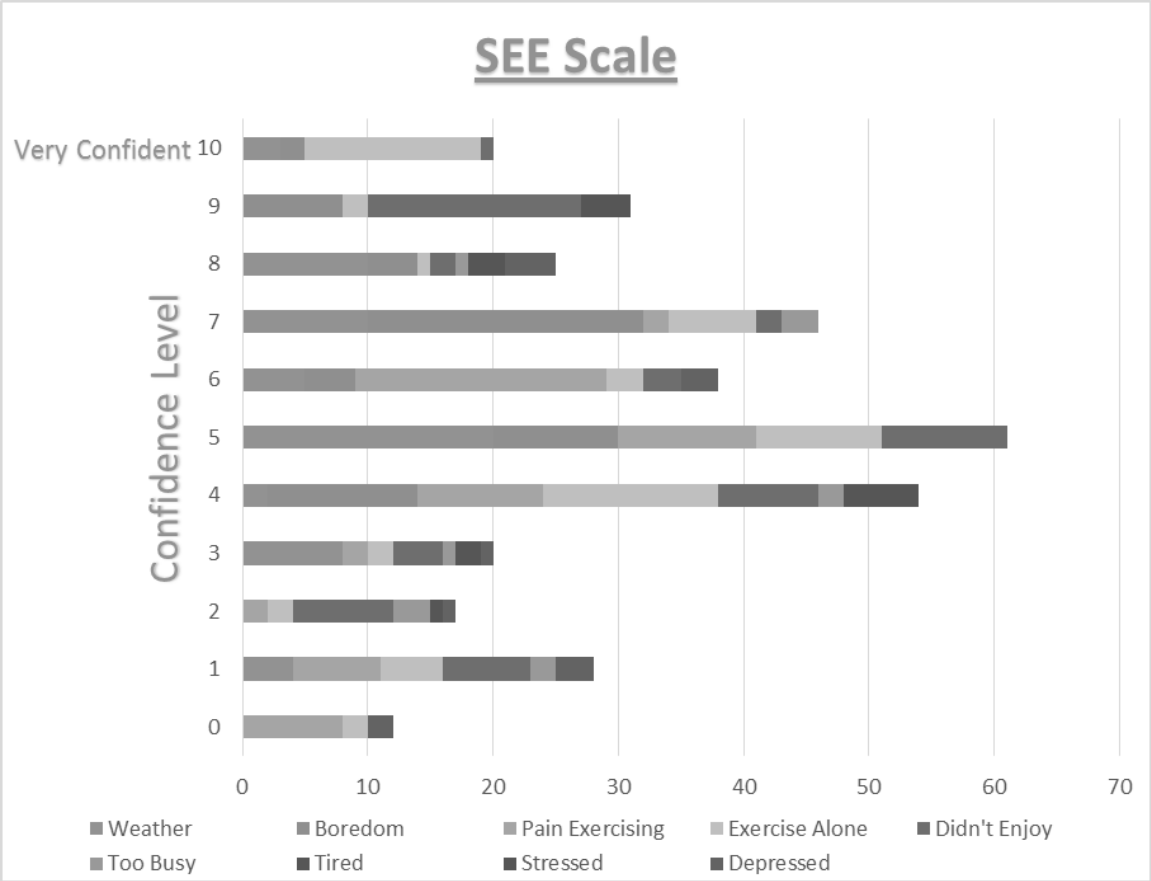

Figure 4: Self-Efficacy for Exercise Scale results.

By the end of January 2018, 30 days after the ALF fall reduction program was in place for 60 days in the facility, there were 4.0 falls per month among the 62 participating residents. This was a decrease in falls compared to the 6.6 average fall rate per month at the project ALF prior to the program. When analyzed, this represented a fall rate

reduction of 39.4% and showed that the evidence-based fall prevention process was effective in reducing falls. The four falls that occurred during the month of outcome evaluation included two residents who fell as a result of trying to navigate the stairs adjacent to the dining hall. On evaluating the two falls, the nursing staff-determined that stairs were becoming a problem, and that residents should not use the stairs unsupervised. Eventually a *stairway closed* sign was posted and this tactic has been working. Another resident tripped while wearing shoes with laces that were not tied, so the family bought him shoes with Velcro instead of laces. The fourth resident who fell did so due to a new rug her daughter had put in her room. The need to remove or secure the rug was explained, and the resident decided to remove the rug. This was an improvement in the safety practice in the facility. In the past an assessment may or may not have been done, there was no systematic documentation at the facility.

This DNP outcome evaluation project was centered on the evidence-based fall reduction program STEADI, as implemented in a Southern California ALF. The literature on evidence-based fall reduction programs suggests that the program implemented for use with seniors should include an assessment of risk of falls and a multidimensional approach to reducing falls. The project ALF utilized the modified CDC STEADI program assessments along with the recommended STEADI interventions. The Self-Efficacy for Exercise Scale was used to evaluate whether residents would continue the exercise program that had been implemented. This was a multidimensional program with several interventions implemented to reduce the risk of falls for the ALF residents.

Assessments of the STEADI program included the Stay Independent Checklist, which assessed for 12 areas of risk and included fall incidents reported by the resident, use of assistive devices, a sense of being unsteady, a sense of being worried about falls, needing to push with hands to stand, having trouble with steps, needing to rush to the toilet, loss of sensation in the feet, taking medication that makes one lightheaded, taking medication to help one sleep, and feeling sad or depressed. Also included was the assessment by nursing staff concerning medications known to increase fall risk due to side effects. These medications included anticonvulsants, antidepressants, antipsychotics, benzodiazepines, opioids, sedatives, anticholinergic, BP medications, and muscle relaxants. Additionally, staff assessed residents by utilizing the Timed Up and Go results, which determines how long it takes the resident to stand up from a chair, walk ten feet to a line on the floor, walk back, and sit down. Any older adult who takes 12 seconds or longer has a higher risk for falling. Finally, nursing staff assessed residents for orthostatic hypotension. This involved having residents sit for five minutes before measuring their BP, then having stand and measuring their BP at both 1 minute and 3 minutes. If there was a drop in systolic BP equal or greater than 20 mm Hg, a drop in diastolic BP equal or greater than 10 mm Hg, or an incident of lightheadedness or dizziness, the person was considered to have an abnormal result and at risk for orthostatic BP with an increased risk of falling.

Literature revealed that probability of falls was linked to several risk factors. Fitzgerald, Fuzhong, and Harmer (2016) reviewed documented incidents of falls in an

assisted living facility. A model for fall risk was used that was similar to the fall reduction plan used in this project. In their project, of the 62 residents participating in the fall reduction program, a total of 39 residents were documented to have 79 fall incidents in the 12 months prior to implementation.

Another study, by Jung et al., (2014), explored the implementation of a program for fall reduction based on nursing advice. It included the registration of risk factors by the patients and the listing of interventions made in order to reduce their falls. The results of this research revealed that fall reduction programs may assist health care providers in intervening in ways that reduce future falls and enhance the applicability of these interventions. The decrease in repeated falls was attributed to the appropriate implementation of the specific fall risk intervention for each resident.

Additionally, literature was explored for other related factors in fall reduction and intervention. Stenhagen et al. (2014) analyzed interventions aimed at decreasing the number of fall incidents among older residents in assisted living facilities. In this research, repeated falls were reported to have reduced by 19%, with supporting fractures decreased by over 77%. The study focused on the positive effects of residential care interventions and concluded that the programs based on multifactor aspects with statistical significance might help in the establishment of the individualized assessment in the living facility.

Finally, according to Avin et al. (2015), there is a substantial body of research on risk factors, interventions, and prevention strategies for falls. This research has provided

evidence for the development of best practice recommendations for fall risk screening, including the Centers for Disease Control and Prevention's STEADI tool kit, which was utilized in this project. They also found that all older adults should be screened for fall risk, and, based on the results of that screening, should have a multifactorial fall risk assessment. Again, this was implemented at the project ALF. Avin et al. (2015) also stated that screenings or assessments for older adults are reimbursable services for physicians according to "Welcome to Medicare" wellness.

From several initiatives, it is clear that attempts are being made to focus on fall risk screening and assessment practices in primary care. This supports the claim that fall reduction initiatives implemented in the ALF setting can be expanded if physicians treat the screening and assessment for falls as a billable service. This will expand the support for fall reduction programs at ALFs.

Implications

The implications of this project are numerous in terms of systems, institutions, communities, and individuals. Clearly, there needs to be a systemic move towards regulations requiring ALFs to put in place fall reduction programs. This may not go over well with the institutions, but in the long run it will provide a savings in medical costs for the healthcare system and individuals related to the treatment required post-fall. Similar fall reduction programs can be implemented in different ALF facilities, which will increase the safety of individuals living at these ALFs and potentially save millions of dollars in health care costs. This could make a positive change in our society by showing

that we can safely and effectively provide care for our elderly population. It will also benefit the communities in which the ALFs are located by improving mortality and morbidity rates.

Most of the above implications are related to rules, regulations, and improvements to society as a whole. However, the most significant implication is the potential benefit to the society if such fall prevention programs can keep the elderly individuals safer in their ALF communities. As previously stated, one of the adverse effects of a fall is increased fear among the elderly. By reducing falls, a potential positive effect on society is also the improved emotional and physical health of the elderly. Because falls cause increased physical and emotional consequences for patients, they represent a substantial threat to the aging population and remain a leading cause of morbidity and mortality in them. Associated with this significant injury is increased anxiety, fear, social isolation, and psychological trauma. Reducing fall risks, reducing falls, and reducing fall-related anxiety will be an enormous benefit to our society.

Recommendations

Many local, regional, and nationwide recommendations emerge from the evaluation of the fall-reduction program at the project ALF. Locally, the project ALF needs to implement an electronic database to help analyze their fall and risk assessments. A routine audit of such a database would enable the ALF to keep track of fall rates and determine whether they are continuing to fall. A Fall Incident Report Form was developed as part of this project, to record and track the fall rate (See Appendix J). It was

also recommended to the ALF, that they should continue the STEADI program in order to maintain this reduced rate of falls. In addition, the evaluation of residents for fall risk factors at regular intervals, and evaluation of new residents on admission were recommended. Meanwhile, keeping a weekly record of falls, and discussing the fall rates at the end of each month, will keep the staff focused on the fall rates. Creating a recognition award for staff in units without any falls in a period of 3 months will motivate staff to continue focusing on fall prevention, as well. A suggested fall rate of 24 or less per year would be much more acceptable than the previous 12-months rate of 79.

The outcomes documented at the project ALF imply that a fall reduction program needs to be implemented in all ALFs. The number of residents with physical and cognitive impairments are continuing to increase as the baby-boomer population ages. ALFs will continue to have an unacceptable fall rate if they do not implement fall reduction programs. Additionally, all ALF facilities should encourage regular fall reduction training programs for both the staff and the residents in the facility. They must have in-service education at regular intervals for staff in order to stay current on new fall reduction programs and other fall reduction recommendations.

Nursing staff play an important role in fall risk reduction. The evaluation of this program's outcomes and its related literature reviews show that healthcare staff, especially nursing staff and providers, make fall reduction programs possible. The DNP student recommends that a prevention program for fall reduction be included in the nursing curriculum as part of the routine geriatric rotation for nursing students. This

would make the focus on preventive care an important component of geriatric nursing, beyond traditional treatment and palliative care.

Governing body policymakers need to become involved in legislating fall reduction regulations for assisted living facilities. The DNP student recommends minimally that in California, the Department of Social Services, Community Care Licensing Division make fall reduction programs a mandate for ALFs in much the same way they regulate the use of cleaning chemicals. If the regulation of cleaning chemicals is deemed important in protecting the health of seniors, then surely fall reduction, which causes many injuries each year, is important.

Further, the DNP student recommends that additional studies in the ALF setting be done to substantiate and verify the outcomes of this evaluation. If the outcomes can be verified, it would give ALF advocates the ammunition they need to pressure the California Department of Social Services to amend regulations to protect seniors from falls.

Contributions of Doctoral Project Team

The doctoral project team contributed in numerous ways. In addition to helping to get the project started, the ALF Administrator and the Director of the Wellness Center at the project facility made space available for the DNP student to use when in the facility. The Wellness Coordinator and nursing staff leadership assisted in coordinating nursing staff meetings that would coincide with the DNP student's schedule. The nursing staff made suggestions regarding the Excel document used for de-identifying and collecting

data. These suggestions made data collection easier by grouping items together by categories. This also made data analysis easier.

Strength and Limitations of the Project

As with most studies, there are strengths and limitations. This project is no different. The numerous strengths are its benefits to the elderly and nursing staff, and its research on the reduction of falls will lead the way to significant cost savings in health care expenses. The project's limitations were its short implementation period, which limited the extent of the findings; because of this, there is no way to guarantee that results will be maintained.

Strengths

The project has numerous strengths. One is that it was able to evaluate the outcomes of a proven, evidence-based program implemented at an ALF. The STEADI program is usually implemented in a community or home setting, so it was useful to show its effectiveness in another type of living situation—an ALF. This may encourage other ALFs to implement a fall reduction program, even though they are not required to do so by law.

Another strength was the increase of knowledge in a field that has inadequate information. Different databases, including National Guideline Clearinghouse, ProQuest Nursing, Allied Health, and Cochrane, were searched, and only a few articles concerning falls in ALF settings were found. Only one article was discovered in the Medical collection and ProQuest health database, which focused only on balance training among

the elderly at an ALF. This project increases knowledge of the successful implementation of a fall reduction program at an ALF.

This project is also valuable to society in that it evaluated the outcomes of a project that could provide needed change. Statistics show that 30% of individuals who are 65 and above are affected by falls, and these statistics increase to 40% for those older than 75. These falls account for 60% of injuries that cause weakness, reduced fitness, constipation, social isolation, immobility, and reduced quality of life (Centers for Disease Control and Prevention, 2017). Highlighting a program with positive outcomes for the elderly will improve society in general.

The project also demonstrated how equipping nursing staff with knowledge and skills can improve care to the elderly residents in an ALF. It also demonstrated the benefits of providing the elderly with solutions to the problem of falling. It assisted the DNP student with expanding her area of expertise related to geriatric needs, and fall prevention specifically. Additionally, the evaluation parameters can be easily used for further research.

Limitations

Although positive outcomes were documented, there are several limitations to the evaluation. One limitation is that the evaluation period was short—30 days post-program implementation—due to the time constraints of the DNP project. Even though the ALF has decided to continue their fall reduction activities, it is possible that as time goes on fewer of the residents will continue with the interventions implemented. This includes the

exercise program. Therefore, residents could return to their pre-program conditions, which would likely increase their risk of falls.

Another limitation is that answers provided on the self-efficacy assessments may not be an accurate reflection of the resident's true feelings about the exercise program. They might have answered the questions to try and please the nurse interviewer. Several of the residents who participated had memory issues, but if not considered extremely impaired, they were included in the program. This could lead to inaccurate data.

Additionally, because the ALF did not keep track of fall data in an EMR system, the data had to be tabulated by hand. The nursing staff did a great job of doing this and of de-identifying data, but there was still a risk of inaccurate data. This is true of any hand-tabulated data and is another reason that an electronic system is needed. Another limitation was that the data is from a rather small ALF in Southern California. The implication is that results may not be applicable to other ALF populations or ALFs located in other states or areas.

Finally, the data revealed a decrease in the total reduction in falls for January as a result of the interventions implemented. However, this does not ensure maintenance of interventions in the coming months. It is possible that as time goes on, staff will become lax in screening and maintaining interventions. Therefore, continued reduction in fall rates at the project ALF, to some extent, depend on the diligence of staff. This is a definite limitation.

Recommendations for Future Projects

There is a definite need for future projects addressing fall prevention in the ALF setting. It is important to determine if other fall reduction programs or other components of the STEADI program will have similar or better outcomes than the modified STEADI program the project ALF implemented. Many multifaceted programs were developed and evaluated in either the community setting or in higher-level elderly care facilities, beyond the ALF setting. It would be useful if those programs were evaluated in an ALF or adapted to the ALF setting. Additionally, it would be useful to know if other methods of evaluation are more useful, such as methods that evaluate the severity of falls.

Summary

The evaluation of outcomes for the ALF fall reduction program showed that the program was successful, and that after 30 days it had a 39.4% reduction in the fall rate among residents participating in the program. The risk assessments were analyzed, and residents were categorized as high (27%), the moderate (26%), or low (47%) risk for falling. The residents received individual interventions for preventing future falls. Analysis of self-efficacy interviews was determined to have an average score of 69%, which showed that residents were more likely than not to continue with exercise as a risk reduction activity.

Section 5: Dissemination Plan

Analysis of outcomes showed that the STEADI program implemented at the project ALF was successful in reducing fall incidents. Therefore, dissemination of findings to the ALF Director and the staff was important, acknowledging their good work. Findings were disseminated to the director of the ALF on April 3, 2018 and shared with the staff the following day at the regular nursing staff meeting. The ALF director of nursing will assist me in setting up a meeting with ALF board of directors after the DNP project is completed. It is equally important that they are aware of the outcomes of the project so that they will continue to support fall reduction activities in their facility.

Dissemination of the DNP project's findings is important. For a doctoral nursing student, it is an important to establish oneself as a leader in nursing. One method I intend to use is the dissemination of the project finding through a PowerPoint presentation in local and state conferences; another is through and project material distribution at regional ALF nursing directors' meetings. There are several methods for disseminating these results, but this likely be best due to the incredible support received from the project ALF. This will not only emphasize the importance of the project but will encourage other ALFs to support DNP students. The strength of this method of dissemination is that it will allow the presentation to nursing directors facing the same problem: elevated fall rates among their residents. The main limitation of this dissemination method is that the audience is relatively small.

The more modalities used to disseminate the information, the better the outcomes will be for the elderly population. According to Mion (1998), the need for evidence on which medical care practitioners can make sound decisions has grown exponentially since the emergence of managed care. If this was true in 1998, it is even truer now. I plan to disseminate the project information at the California Association of Nurse Practitioners (CANP) conference, and to publish in the *Journal of Gerontological Nursing*, as this project's supervisors have suggested. According to Kamler (2008), encouragement from supervisors is an important aspect of proceeding to publication. The *Journal of Gerontological Nursing* is a venue for publishing on issues for the elderly, the primary residents at ALFs. There is currently no fall reduction program specifically designed for ALFs. The presentation of this information is important for nursing in general, but specifically to other ALF nursing directors. With these materials, others will be able to duplicate the project at their facilities.

Analysis of Self

As a nurse practitioner, scholar, and the project manager, I implemented an outcome evaluation project titled "Fall Reduction among geriatric population in assisted living facilities." The project involved 62 residents who live in an ALF. The analysis was conducted 30 days after the ALF implemented a 60-day fall reduction program. This project gave me an entirely new perspective. It was not only my duty to make sure that the residents at the ALF had their medical needs met, but it became my duty as a nurse, scholar, and project manager to be involved in evaluating activities that could improve

their emotional and psychological well-being. I began to see their safety in a new light, and became an advocate for the residents as I shared outcomes with the facility and nursing staff. This experience helped me realize that I no longer want to be simply a nurse practitioner: I want to be a nurse practitioner who sees a need for change and helps that change happen. I want to be the type of nurse people recognize as an advocate, a nurse who cares about her patients and makes a difference in their lives.

This project was not without its challenges. Time management was initially an issue. The more involved I became, however, I learned that there were ways to make the time for the project if I prioritized better. As a working nurse with two jobs, I had to carve out the time for this project from what used to be personal time. At first, this was hard, but as time went on, it became more routine. As I became more involved, I started to view the project time as valuable and important to who I was becoming. The project became my mission.

As the project moved towards completion, I was excited to see what the outcomes would be, and it was a pleasure to share with the project ALF staff the benefits they achieved for their residents. One of the challenges was getting the staff to view the completion of the project as the beginning of a journey of continued safety for their residents, not an end. As I discussed the forms used in the project with the staff, they were able to see that their role would not be as encompassing as it was during the project, because the project involved collecting data on every patient at the same time. They recognized that the intent was for analysis to be ongoing over time and concentrated into

one 2-week period. Once this was discussed, the staff was more enthused about continuing the analysis. My desire for advocacy spread to the staff, and my scholarly journey benefited not only myself, but the residents at the ALF, its administration, and its nursing staff.

Summary

The fall prevention program outcomes showed that the STEADI program implemented at the project ALF was successful at reducing falls among the elderly residents. Dissemination of the findings to the ALF staff members was very important in assuring the continuation of the program. Both the staff at the ALF and the ALF board members were critical partners in this process. In addition, it was deemed important that the information be disseminated on a broader level. It is my intention to disseminate this information further through presentations and publication. The benefits of this project were not just the documentation of the outcomes of the fall reduction program in the ALF, but also the training of the ALF administration and nursing staff, and my own changed perspective and life goals.

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Appendix A: Patient Risk Factors, Baseline Data

Patient De-identified case number									
RISK FOR FALLS list of medications									
Anticonvulsants									
Antidepressants*									
Antipsychotics									
Benzodiazepines									
Opioids									
Sedatives-hypnotics*									
Anticholinergics									
Antihistamines									
Medications affecting blood pressure									
Muscle relaxants									
STEADI fall risk assessment									
fall past year									
worries about falls									
heart problems									
cognitive problems									
Incontinence									
Depression									
foot problems									
Other									
TUG >= 12 seconds									
orthostatic hypotension									
Number of fall past 12 months									
Number of fall 30 days post									

Appendix B: 30 Days Post-Implementation Patient Data

Patient De-identified case number											
MEDS c=med changed dc=med discontinued											
Anticonvulsants											
Antidepressants*											
Antipsychotics											
Benzodiazepines											
Opioids											
Sedatives-hypnotics*											
Anticholinergics											
Antihistamines											
Muscle relaxants											
Medications affecting blood pressure											
Other interventions											
patient participated in exercise program											
Patient received OT-PT											
room obstacle removed r=rug w=wires o=other											
furniture moved											
assistive device use improved-training provided											
new assistive device provided c=cane w=walker											
over toilet commode provided											
Patient received education about orthostatic BP											

Appendix C: Stay Independent

Appendix D: Medications Linked to Falls

FACT SHEET

Medications Linked to Falls

Review medications with all patients 65 and older. Medication management can reduce interactions and side effects that may lead to falls.

STOP medications when possible.
SWITCH to safer alternatives.
REDUCE medications to the lowest effective dose.

Check for psychoactive medications, such as:

- Anticonvulsants
- Antidepressants*
- Antipsychotics
- Benzodiazepines
- Opioids
- Sedatives-hypnotics*

Review prescription drugs, over-the-counter medications, and herbal supplements. Some can cause dizziness, sedation, confusion, blurred vision, or orthostatic hypotension. These include:

- Anticholinergics
- Antihistamines
- Medications affecting blood pressure
- Muscle relaxants

Develop a patient plan that includes medication changes, and a monitoring plan for potential side effects. Implement other strategies, including non-pharmacologic options to manage conditions, address patient barriers, and reduce fall risk.

Visit the American Geriatrics Society Beers Criteria for more information on medications linked to falls.

CDC's STEADI tools and resources can help you screen, assess, and intervene to reduce your patient's fall risk. For more information, visit www.cdc.gov/steadi

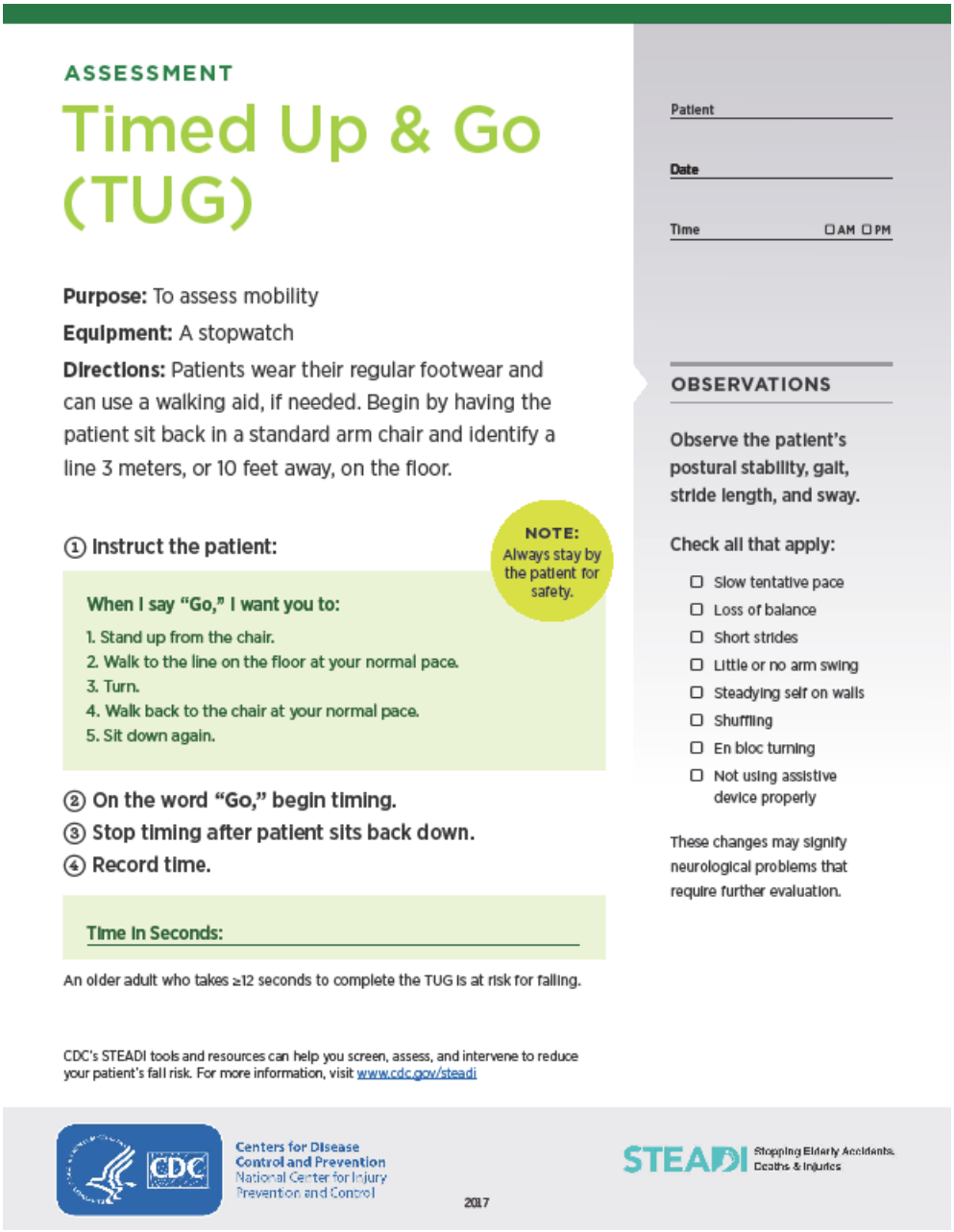
*Antidepressants include TCAs and SSRIs. Sedative-hypnotics include eszopiclone, zaleplon, and zolpidem.

Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

2017

STEADI Stopping Elderly Accidents, Deaths & Injuries

Appendix E: TUG Gait-Agility Test



ASSESSMENT

Timed Up & Go (TUG)

Patient _____

Date _____

Time _____ ☐ AM ☐ PM

Purpose: To assess mobility

Equipment: A stopwatch

Directions: Patients wear their regular footwear and can use a walking aid, if needed. Begin by having the patient sit back in a standard arm chair and identify a line 3 meters, or 10 feet away, on the floor.

NOTE: Always stay by the patient for safety.

① Instruct the patient:

When I say "Go," I want you to:

1. Stand up from the chair.
2. Walk to the line on the floor at your normal pace.
3. Turn.
4. Walk back to the chair at your normal pace.
5. Sit down again.

② On the word "Go," begin timing.

③ Stop timing after patient sits back down.

④ Record time.

Time in Seconds: _____

An older adult who takes ≥12 seconds to complete the TUG is at risk for falling.

OBSERVATIONS

Observe the patient's postural stability, gait, stride length, and sway.

Check all that apply:

- ☐ Slow tentative pace
- ☐ Loss of balance
- ☐ Short strides
- ☐ Little or no arm swing
- ☐ Steadying self on walls
- ☐ Shuffling
- ☐ En bloc turning
- ☐ Not using assistive device properly

These changes may signify neurological problems that require further evaluation.

CDC's STEADI tools and resources can help you screen, assess, and intervene to reduce your patient's fall risk. For more information, visit www.cdc.gov/steadi

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Appendix F: Screening for Orthostatic BP

ASSESSMENT

Measuring Orthostatic Blood Pressure

Patient _____

Date _____

Time _____ ☐ AM ☐ PM

① Have the patient lie down for 5 minutes.

② Measure blood pressure and pulse rate.

③ Have the patient stand.

④ Repeat blood pressure and pulse rate measurements after standing 1 and 3 minutes.

A drop in BP of ≥20 mm Hg, or in diastolic BP of ≥10 mm Hg, or experiencing lightheadedness or dizziness is considered abnormal.

POSITION	TIME	BP	ASSOCIATED SYMPTOMS
Lying Down	5 Mins.	BP____ /____ HR_____	
Standing	1 Min.	BP____ /____ HR_____	
Standing	3 Mins.	BP____ /____ HR_____	

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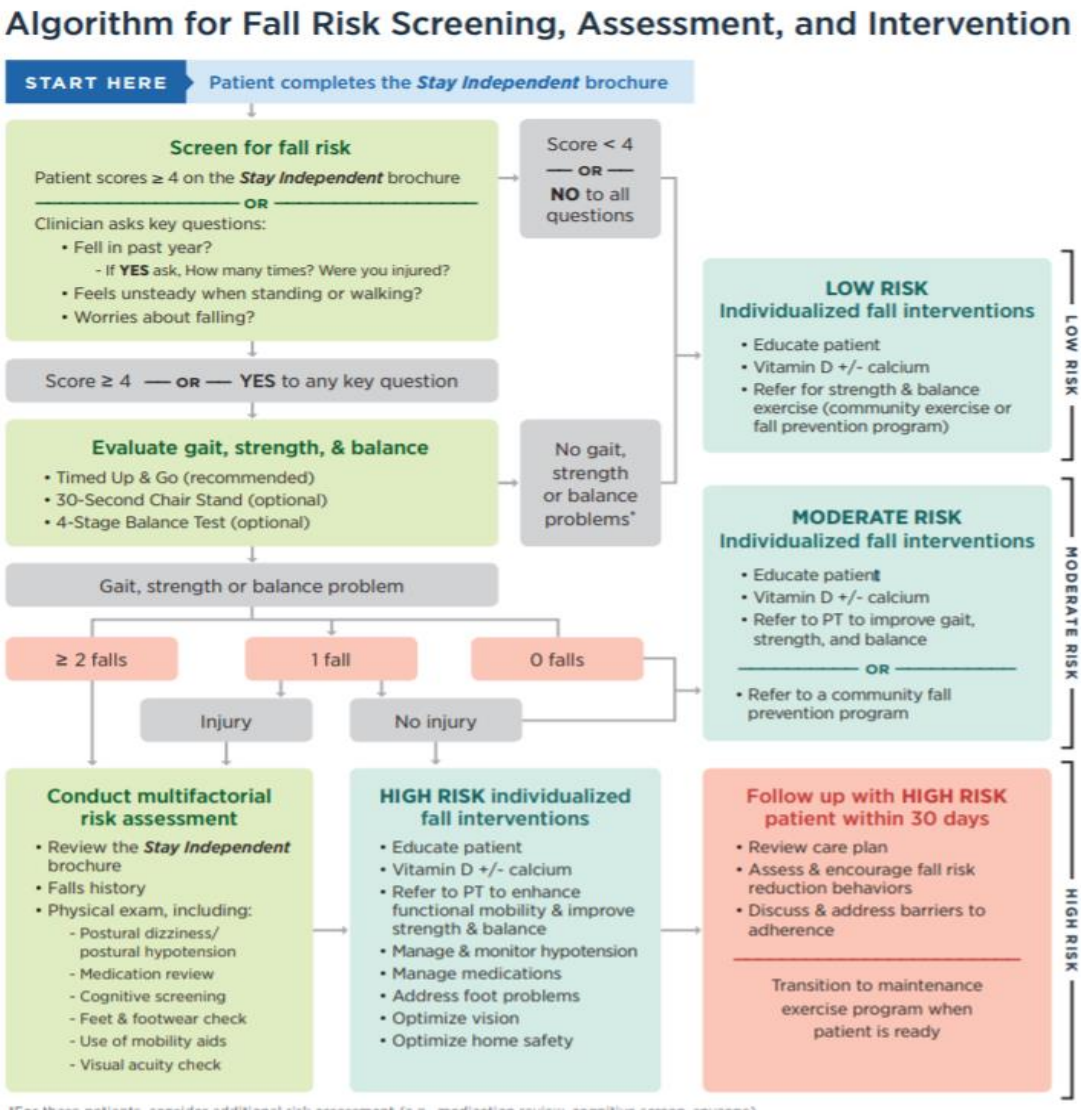
Appendix G: Patient Data—Modified Fall Risk Assessment

Patient: _____ Date: _____ Time: _____ AM/PM

Fall Risk Factors	**Factor Present?**		**Notes**
Falls History	Yes	No	
Any Falls in past year?	Yes	No	
Worries about falling or feels unsteady when standing or walking?	Yes	No	
Medical Conditions	Yes	No	
Problems with heart rate and/or rhythm	Yes	No	
Cognitive impairment	Yes	No	
Incontinence	Yes	No	
Depression	Yes	No	
Foot problems	Yes	No	
Other medical conditions (Specify)	Yes	No	
Medications	Yes	No	
Is person on any fall risk medications? Check below [ ]Anticonvulsants [ ]Antidepressants [ ]Antipsychotics [ ]Benzodiazepines [ ]Opioids [ ]Sedatives-hypnotics [ ]Anticholinergics [ ]Antihistamines [ ]Medications affecting blood pressure [ ]Muscle relaxants	Yes	No	
Gait, Strength & Balance			
Timed Up and Go (TUG) Test > or = 12 seconds	Yes	No	
Postural Hypotension			
A decrease in systolic BP >/= 20mm Hg or a diastolic bp of >/= 10mm Hg or lightheadedness or dizziness from lying to standing?	Yes	No	

Appendix H: Algorithm for Fall Risk Screening, Assessment, and Intervention



Appendix I: Self-Efficacy for Exercise (SEE) Scale and Questions

Self-efficacy For Exercise (SEE) Questions

How confident are you right now that you could exercise three times per week for 20 minutes if:

	Not Confident—Very Confident
1. The weather was bothering you	0 1 2 3 4 5 6 7 8 9 10
2. You were bored by the program or activity	0 1 2 3 4 5 6 7 8 9 10
3. You felt pain when exercising	0 1 2 3 4 5 6 7 8 9 10
4. You had to exercise alone	0 1 2 3 4 5 6 7 8 9 10
5. You did not enjoy it	0 1 2 3 4 5 6 7 8 9 10
6. You were too busy with other activities	0 1 2 3 4 5 6 7 8 9 10
7. You felt tired	0 1 2 3 4 5 6 7 8 9 10
8. You felt stressed	0 1 2 3 4 5 6 7 8 9 10
9. You felt depressed	0 1 2 3 4 5 6 7 8 9 10

Appendix J: Fall Incident Report

Fall Incident Report

Resident Name	Click here to enter text.	**Date**	Click here to enter text.	**Time**	Click here to enter text.
Location	Click here to enter text				
Reported by	Click here to enter text.	**Date**	Click here to enter text.	**Time**	Click here to enter text.
Reported to	Click here to enter text.	**Date**	Click here to enter text.	**Time**	Click here to enter text.
Fall Witnesses					
Witness 1	Click here to enter text	**Witness 2**	Click here to enter text		
Witness 3	Click here to enter text	**Witness 4**	Click here to enter text		

Description of Incident Severity of Fall

Analysis Details	
Resident appeared unstable	(•) Yes ( ) No
Redness or bruising noted	( ) Yes ( ) No
911 Called	( ) Yes ( ) No
Resident transported to hospital	( ) Yes ( ) No
Is Resident taking medications that are high risk for falls	( ) Yes ( ) No
List medications	Click here to enter text.

Corrective action taken at time of incident	Click here to enter text.		
Corrective action approved by	Click here to enter text.	**Date**	
Action taken to avoid similar incidents	Click here to enter text.		
Additional Comments	Click here to enter text.		