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Fall-Related Patient Education: An Essential Feature of a Fall Prevention Program

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Abstract

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MSN, FNP Walden University, 2017

BSN, Shenandoah University, 2007

Project Submitted in Partial Fulfillment

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Abstract

This project documented the evaluation of a voluntary patient falls prevention education program (VPFPEP) of a rehabilitative facility in a Mid-Atlantic US state and ascertained its sustainability. The project was designed using the customized Moore et al. evaluation model and Lippitt's planned theory of change to encourage patient engagement in physical activity (PA) through fall prevention education to allay patients' fear of falling. The sample included patients who opted into the facility's VPFPEP. Evaluation was performed using run charts to visually and quantitatively monitor trends and patterns of fall incidents over time. Run charts also facilitated comparison of injuries sustained from falls, as a measure of clinical performance. Results showed that during program implementation, the average yearly fall rates were consistently lower from 2016 to 2019 compared with 2014 and 2015 before the program (5.323 and 6.902 falls PTOPD): 2016-4.157 (22%); 2017-2.624 (51%); 2018-1.877 (65%); and 2019-1.374 (74%) falls PTOPD. Findings suggest that the VPFPEP is resource-sustainable given the same resolve among facility healthcare personnel, and comparable patient receptiveness of the program. Recommendations include strengthening engagement and commitment of facility personnel through professional development, support groups, linkages with relevant agencies. Averting injury and saving lives from a preventable event promotes positive social change through safe healthcare delivery. The project facilitates positive social change through fall prevention efforts and education of high-risk fall patients to share responsibility for their safety.

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Dedication

I would like to dedicate this project to my lovely kids Chisom and Chinedu. This journey wouldn't have been successful without your tender loving understanding and patience. And to God Almighty who gave me the knowledge, wisdom and strength to persevere through this journey.

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Table of Contents

List of Tables

List of Figures

Section 1: Nature of the Project

Introduction

Engagement in physical activity (PA) is generally advantageous to all age groups, even among older adults (Musich, Wang, Hawkins, & Greame, 2017). Cognizant of its benefits to health and well-being, the World Health Organization (WHO) encourages at least 150 minutes each week of physical activity (PA) on a moderate level with strength training included in the regimen. While the WHO recommendation is targeted toward those aged 8–64 years, those adults aged 65 years and older actually require additional exercise to promote balance. However, most older adults tend to have a decrease in PA as their age increases (Boulton et al., 2019).

Advanced age is a common reason for a reduced or lower level of PA among older adults due to frailty, muscle weakness, and fear of falling. However, the debate persists about the association between PA and the risk of falling (Guirguis-Blake, Michael, Perdue, Coppola, & Beil, 2018; Klenk et al., 2015). For example, a fall in the previous year, especially among older female adults, tends to be a predictor of fear of falling (Lavedán et al., 2018). Saftari and Kwon (2018) posited that a number of factors can predict a fall such as balance and gait control as well as cardiovascular, musculoskeletal, somatosensory, vestibular, and visual functions.

Oepen et al. (2018) confirmed in their analysis of 510 falls that fall rates are quite high in hospitals. They reported a fall rate of 17.7 falls per one thousand hospital days in a geriatric psychiatry department. This fall rate exceeded what was reported in literature prior to their study: a range of 3.2–17.1 falls per thousand hospital days in geriatric

psychiatry facilities. Moreover, almost 2% of the falls had severe consequences, such as fracture and cerebral hemorrhage and nearly 12% resulted in moderate injuries, such as abrasions, contusions, and hematomas (Oepen et al., 2018). Thus, fall intervention is a critical component of a hospital's safety practice environment. The DNP project site launched such an intervention about 3 years ago. Since then, both patients and hospital staff were vocal about the benefits of the fall safety practices instituted. The facility administrator was optimistic that the fall intervention currently in place brought about a marked improvement in fall and related accident statistics and looks forward to persistently enhancing patient's safety and well-being during hospitalization and after discharge with regard to falls.

Problem Statement

Hill et al. (2015) presented evidence that "geriatric and rehabilitation wards have higher falls rates (between 10 and 17 per 1000 patient bed days) than surgical or acute care wards" (p. 2592). Incidentally, the majority of the project site patients were located either in the geriatric or the rehabilitative department. Given this, the fall rates and the associated injuries were persistent problems in the project site when the fall rates were between the 50th and 65th percentile, compared with other issues closely monitored in the facility. In 2014, the average fall rate was 5.323 falls per thousand occupied patient days (PTOPD). The rate peaked in March that year at 8.696 falls PTOPD with the average annual bed occupancy rate at 88%. As an intervention to mitigate the high fall incidents, the hospital launched a patient-centered fall prevention program comprising of customized patient fall education among other practices around the bedside and other

care areas. About the same time 3 years ago, fall rates were down to 2.963 falls PTOPD with an average annual occupancy rate of 90%. However, management and the patient safety committee consistently pushed for further improvement to zero falls or as low as possible.

Among geriatric and rehabilitation patient, fall prevention is a significant endeavor because these patients often embrace sedentary lifestyle for various reasons (Klenk et al., 2015). Falls not only cause functional impairment but may exacerbate the existing morbidity burden. (Gale, Westbury, Cooper, & Dennison, 2018; Jeon, Jeong, Petrofsky, Lee, & Jim, 2014). Moreover, falls among older adults often require disability-related home care arrangements and/or premature nursing home admission, and worst, may result in mortality (Jeon et al., 2014).

A study published in 2000 revealed that one third of community-dwelling older adults and 60% of those in nursing homes experience falls each year, with 70% of deaths by accident among adults 75 years and older attributed to falls (Fuller, 2000). The preceding statistics cost an estimated US $19 billion in public health expenditures (as cited in Mileski et al., 2019). Comparatively, the projected fall expenditures in 2020 will be US $85 billion and an “excess of 17.3 million falls per year” among older adults (Mileski et al., 2019, p. 52). There is, therefore, significant relevance in crafting an effective fall prevention intervention that patients can benefit from extending post discharge. Thus, an effective fall prevention intervention reduces the risk of adverse consequences wherever falls happen. The case for proactive and more effective fall

intervention programs, therefore, ceases to be just a health issue but a financial one as well. As Mileski et al. (2019) highlighted, mitigation of fall risks is an urgent imperative.

Purpose

At the project site, fall rates prior to 2015 were between the 50th and 65th percentile. From a health and well-being perspective, no percentile rate for falls is acceptable, as all falls, regardless of location, are considered to be preventable. A recent study by Chippendale and Raveis (2017) disclosed unmet outdoor fall prevention education and training needs among community-dwelling adults. This confirms that falls happen not necessarily because of a gap in nursing practice, but more reasonably, due to education and training needs that remain unaddressed in practice. Furthermore, fall prevention education and training should be targeted at the home environment because it differs from a healthcare environment. Thus, the gap in practice pertains to contextual elements of fall prevention interventions in terms of training and education beyond the context of the project site.

The purpose of this project was to evaluate the effectiveness of the project site's voluntary fall prevention education program and to determine if the voluntary fall prevention education program is sustainable. I did this by creating run charts to monitor trends and patterns pertinent to fall prevention education strategies and practices launched. I then evaluated the run charts for their state of operation and developed recommendations for the facility's fall prevention education program. Finally, I presented the run charts and the corresponding recommendations to the stakeholders at the project site.

Practice-Focused Questions

This project included an evaluation of an existing quality improvement (QI) initiative in the selected project site. I used the following practice-focused questions to address the primary nursing problem in this study:

1. Did the facility's voluntary fall prevention education program help reduce fall rates?
2. Is the facility's voluntary fall prevention education program sustainable?

At the project site, a palliative/rehabilitative care facility, patients are aged 18 years and older and include older adults or geriatric patients, with the typical age of the patients being 40 years and older. All patients are covered by the fall prevention program, but the patient education program is voluntary. Those patients who volunteer are presented with the informed consent form and are introduced to the program mechanics by the nurse case manager/patient educator. As a common practice, it is also the nurse case manager who undertakes the patient education sessions.

All patients who voluntarily opt into the patient education program are given education. Those who refuse to be part of the patient education program are excluded. However, for the purpose of this QI evaluation, I only analyzed and evaluated fall data from those participants in the education program.

The targeted outcomes of the voluntary education program were decreased hospital falls, as reported by nurses or the patients themselves, and when available, decreased falls at home or outdoors after discharge, as reported by the patient or a member of the patient's immediate family. Available data in this case refers to when

there is feedback from the patient or family member after discharge that there was, in fact, a fall.

Nature of the Doctoral Project

This project was an evaluation of an existing QI initiative. Efficacy of the project site's voluntary fall prevention education program was the subject to QI evaluation in terms of patient outcomes in the context of fall rates. The facility has a data collection procedure in place to record and document pertinent information about the program components. The data that I used for this study were deidentified. Data management was under the supervision of the fall prevention committee. Information collected in the data management system served as the main source of evidence for patient outcomes. In terms of organization and analysis of the evidence, I evaluated patient outcomes (fall rates) with the use of a run chart. The evidence that I utilized in the analysis were the data and results collected by facility-designated personnel based on the initiatives instituted in the facility for fall prevention and patient safety. The outcomes were reduced or zero fall rates; fall rates are desired or expected to be reduced significantly and ideally expected to be zero.

Significance

Patients in geriatric and rehabilitation units are prone to falls and consequent injuries (Hill et al., 2015). They are, therefore, the key stakeholders who benefited the most as the gap identified in this project was addressed. Falls are also related to low levels of PA and inactivity in older adults (Klenk et al., 2015). However, falls that result in injury are considered as *never events* in the hospital and even at home because falls are

generally preventable (Bouldin et al., 2013; Chu, 2017; Quigley, 2015). Aside from patients, nurses and other members of the healthcare team are also stakeholders because they have been highly instrumental in the efficient resolution of the local fall problem. One plausible strategy to reducing falls is an increase in PA among older adults. Through the project site's voluntary falls prevention education program, the patients were encouraged to increase their engagement in physical activity via motivational design, as demonstrated in Stanmore et al. (2019) in the Exergame system. Increase in PA among older adults is expected to increase compliance with WHO recommendations on physical activity. As discussed in Shier, Trieu, and Ganz (2016), exercise-based fall programs help prevent falls. Thus, increase in PA is expected to result in fall prevention for the project site. Furthermore, Musich et al. (2017) highlighted that promotion of intermediate levels of physical activity is a more enjoyable and beneficial intervention that can help reduce the prevalence of chronic conditions. Thus, accomplishing the goals of the fall prevention education program also contributes to good nursing practice in managing chronic conditions.

This project is significant in that it may be transferrable to comparable practice areas, such as the orthopedic department and the children's ward of other hospitals or healthcare facilities. This DNP project can catalyze social change and produce a positive outcome if the QI assessment of the fall prevention program is realized. The social change desired in this project is injury prevention at the societal level. Following from McClure, Mack, Wilkins, and Davey (2015), focusing on population-level factors, can be directed towards a broader population, which can be included within the social and

physical frameworks of community function. A successful facility-based patient falls education prevention program can be tailored for a community of older adults to generate a societal impact for fall prevention. Additionally, prevention of falls translates to prevention of injury on a systemic level, which is the social change being targeted in this project

Summary

Fear of falling and/or previous falls are common reasons for low PA among older adults due to frailty and muscle weakness (Klenk et al., 2015). Generally, however, falls also happen because of issues with balance and gait control, as well as cardiovascular, musculoskeletal, somatosensory, vestibular, and visual functions. The population cohorts with the aforementioned impairments are traditionally confined in hospitals. The practice-focused questions were subjected to QI evaluation. In this intervention, I addressed the facility's fall rates at the 50th to the 65th percentile, which is quite high, and was traced to unaddressed education and training needs of patients in a holistic, multi-context environment. I collated, organized, analyzed and compared results from the voluntary patient falls prevention program with evidence from literature. As explained in Shier et al. (2016) and Musich et al. (2017), exercise is an enjoyable method of preventing falls and reduce the discomfort of chronic conditions. This project is, therefore, significant because given that the goals of the intervention were achieved, exercise-based fall programs will not only help prevent falls, but also facilitates reduction of the prevalence of chronic conditions. Prevention of falls also translates to prevention of injury on a systemic level. Section 2 will include the background and context of the

project including concepts, models, and theories. I will also explain the relevance of the project and the problem to nursing practice.

Section 2: Background and Context

Introduction

Fall rates have been a persistent problem at the project site until 5 years ago when the voluntary falls prevention education program was introduced. Falls usually happen in the project site owing to the type of healthcare service it offers. The facility typically provides services to geriatric and rehabilitation patients. According to Hill et al. (2015) geriatric patients and patients undergoing rehabilitation are among the most fall risk-prone patients. Nevertheless, like any other healthcare facility, the project site strives to implement fall safety measures. Falls occur in the project site not necessarily because of a gap in nursing practice, but due to fall education and training needs of patients which have not been addressed in practice.

The purpose of the DNP project was to evaluate an existing QI initiative, a voluntary fall prevention education program. The practice-focused questions were as follows:

1. Did the facility's voluntary fall prevention education program help reduce fall rates?
2. Is the facility's voluntary fall prevention education program sustainable?

This section includes an outline of the models and theory that I used for this doctoral project and includes a synthesis of primary literature and foundational concepts which inform the project. Also included in this section is a discussion of the current state of nursing practice and the relevance of the proposed project to nursing practice. Finally,

I described the local background and context of the DNP project as well as my role in the project.

Concepts, Models, and Theories

I adopted a number of models and theories from nursing and healthcare literature to inform this project about quality improvement evaluation. Authoritative health organizations published relevant documents which offered valuable insights in the development of the project evaluation model for this doctoral project along with relevant scholarly articles from nursing and other allied health science journals. I used the customized evaluation model crafted by Moore et al. (2014) based on the Centers for Disease Prevention and Control (Centers for Disease Prevention and Control [CDC], 1999) framework and Lippitt's planned theory of change for project evaluation model development.

Moore et al.'s (2014) Customized CDC Model

I used the Moore et al. (2014) study for guidance about the design of an internal evaluation program and an evidence-based customized model based on the CDC (1999) evaluation framework. The CDC framework is composed of six cyclic steps in evaluation practice and four standards for effective evaluation. The steps are as follows: stakeholder engagement; program description; focused evaluation design; collection of credible evidence; justification of conclusions; and utilization/sharing of lessons learned. The four main standards of utility, feasibility, propriety, and accuracy carry with them a total of 30 specific standards (CDC, 1999).

Moore et al. (2014) argued that in evaluating a QI initiative, the healthcare organization stands to benefit more with an internal evaluator than with an external evaluator, not only in terms of cost considerations, but also grounded on the necessity of insider knowledge of the systems and processes in the fall safety and prevention program. Moore et al. (2014) also inserted ideation and kickoff, strategizing, writing the evaluation plan, as well as promotion and application of the evaluation findings when they customized the CDC (1999) evaluation model. Thus, Moore et al.'s (2014) evaluation model should provide sufficient flexibility for adjustment and recalibration of the program objectives and targets.

Theory of change. Given that a QI initiative entails a change process, I browsed relevant literature for an appropriate theory of change and found Lippitt's planned theory of change as a good anchor for the QI evaluation. As Mitchell (2013) discussed, Lippitt adopted terminology in his theory of change similar to the nursing process model. The elements of the nursing process model are assessment, planning, implementation, and evaluation. Lippitt's theory is quite different from Lewin's or Rogers's theory because Lippitt is more focused on the researcher's role and responsibility as a change agent rather than the evolution of the change. Lippitt conjectured that "information is continually exchanged throughout the process" (Manyibe, Aref, Hunter, Moore, & Washington, 2015, p. 26). There are seven nonlinear phases involved in Lippitt's planned theory of change: (a) problem diagnosis; (b) assessment of the motivation and the locale's capacity for change; (c) assessment of resources and motivation of the change agent; (d) definition of the progressive stages of change; (e) clarify the roles and

responsibilities of the change agent; (f) implementation and maintenance of change; (g) gradual withdrawal of the change agent from the change relationship (Manyibe et al., 2015).

Relevance to Nursing Practice

According to a recent study by Nuckols et al. (2017), the time invested by nurses to quality improvement results to substantial amount of savings or opportunity costs. This was supported by Gu, Balcaen, Ni, Ampe, and Goffin (2016), who argued that nursing is the "front line of defense against falls" (p. 7). Among healthcare providers, nurses are in the best position to carry out falls prevention efforts owing to their frequent and direct contact with patients. Thus, nursing practice forms the nucleus of patient safety in the hospital. In this respect, good nursing practice comprises more than just knowledge and training in standard operating procedures, including interventions for fall prevention, but also an earnest desire to execute continuous improvement towards patient safety (Gu et al. 2016). This DNP project was, therefore, of relevance to nursing practice because entrusting every nurse with a stake in the culture of safety will not just contribute to improvement of the practice. Every nurse's effort directed towards fall prevention lays the groundwork for continuous improvement of patient safety.

History of the Fall Problem in Nursing Practice

A fall refers to "an event which results in a person coming to rest inadvertently on the ground or floor or other lower level" (as cited in Delbaere, Sherrington, & Lord, 2013). Falls are globally regarded as a major health-associated challenge, which not only results in physical injury, but costs in terms of reduced quality of life, and expenditures

both for health and social care. Falls may also bring about a decline in a person's functionality and independence, and are key causes of injury-related hospital confinement among the geriatric population (Delbaere et al, 2013).

According to The Joint Commission (2015) in the United States, whose international branch is tasked with global accreditation of medical services, the number of inpatient falls in hospitals are in the 100 thousands each year. Johnston and Magnan (2019) cited from an estimate by the Agency for Healthcare Research and Quality (AHRQ) that at least 700,000 to a million falls happen in U.S. hospitals. Additionally, The Joint Commission (2015) cited literature that up to 50% of these are injurious falls, which necessitate not just additional treatment, but at times, longer hospital stays by 6.3 days. On the average, an injurious fall can cause a mean of $14,000. Among falls with injury reported to The Joint Commission database, over three-fifths of these events had been fatal. In addition to hospital falls, however, non-hospital contexts like that of long-term care facilities also posted a significant number of falls.

There is a diverse set of prevention interventions used to address falls. This includes assistive equipment, bedside change-of-shift reports, fall risk alerts and assessments, hourly rounds, medication management, safety education, as well as transfer and toileting assistance by staff. Additionally, as of October 2008, costs associated with inpatient falls were not reimbursed by the Centers for Medicare and Medicaid Services (CMS). However, although the CMS no-pay policy led to an increase in the adoption of fall prevention strategies, as reported in Fehlberg et al. (2017), there was little, if any, evidence that the measures implemented reduced fall events.

With all the attention and various strategies launched for fall prevention, falls, particularly injurious falls, remain markedly consequential and still among the top reportable events, not just in the United States, but globally (as cited in Opsahl et al., 2017). Thus, the nursing profession should stay actively engaged in fall research because falls are preventable events. The nursing profession should, therefore, be relentless in searching for the most optimal intervention or set of interventions that will preempt the 2020 projection in Opsahl et al. (2017) that by then, over four million Americans may incur injurious falls per year that will sum up to expenditures of about 47 billion dollars annually.

Current State of Nursing Practice in Fall Prevention Education

Patients in hospitals that adopt a multilevel approach on fall prevention education substantially benefit from current nursing practice as research-based evidence is translated into practice. To clarify, current practice in this section was grounded on literature from 2015 onwards. The multilevel approach is guided by the community of practice (CoP) model and features multifactorial strategies for fall prevention with emphasis on falls prevention education. Francis-Coad et al. (2018) recognized the varying context of healthcare staff from a range of facilities that provide care for the elderly. Thus, they measured outcomes to efficiently configure findings in a context-mechanism-outcome (CMO) format and linked these with explanatory theories. The research team led by Francis-Coad (2018) informed nursing practice about the outcomes of fall prevention programs in 13 facilities.

Members of the CoP, who participated in the Francis-Coad (2018) research from each of the 13 facilities, gained significant knowledge and deeper insight about fall prevention strategies, and better awareness of falls prevention. Francis-Coad et al. (2018) acknowledges interactions among the CoP members and their university researcher-partners in crafting fall prevention strategies as fall prevention education for healthcare providers. The researchers regarded their experience with the CoP members as a "social learning opportunity" in the pursuit of consensual falls prevention strategies.

Francis-Coad et al. (2018) revealed popular preference for posters as a current practice in falls education to promote mindful focus among healthcare staff, and as reminders for patients with no diagnosis of cognitive impairment. Personalized falls strategy checklists are common ways of reminding the staff as to the best strategies to use. The research team led by Francis-Coad (2018) developed their proposed CMO configurations based on the impact of the interactions and the consequent actions. Their findings showed that engagement and connections facilitated the falls prevention education among the healthcare staff who were members of the CoP. Accordingly, the interdisciplinary falls prevention CoP emerged to be the most valuable evidence of the Francis-Coad et al. (2018) study in the "translation of falls prevention evidence to practice" (p. 10). At the same time, the interdisciplinary falls prevention CoP may also be regarded as a crucial input in the state of current practice in falls education in terms of its role in translation of research evidence into practice.

Similarly, McKenzie et al. (2017) offered evidence and practice experience to the effect that the current state of nursing practice in falls prevention education is

interprofessional (IP) and collaborative, not only for patients but also for the staff who care for these patients. McKenzie et al. (2017) showed that collaboration via IP teaching teams provides support for IP practice teams working toward falls reduction. McKenzie et al. (2017) assembled an IP teaching team from the fields of gerontology, medicine, nursing, pharmacy, and social work for their study on falls prevention education of healthcare providers. The centerpiece of the falls prevention education in the McKenzie et al. (2017) research adopted some guidelines from the American Geriatrics Society (AGS) and the British Geriatrics Society (BGS) in developing training procedures in multiple settings. Among the guidelines considered from AGS and BGS were falls screening and risk reduction for falls. McKenzie et al. (2017) carried out teaching and training for falls education through interactive methods, including coaching, discussion, and skills practice. The researchers concluded that IP falls prevention education program augurs well in addressing training gaps in healthcare safety practice and the community-based care needs of the elderly.

So far, Francis-Coad et al. (2018) and McKenzie et al. (2017) showed that patient education, combined with one or more interventions, have been a staple fall prevention strategy. Opsahl et al. (2017) added to this current nursing practice as they discussed the strategy of bundling interventions with patient education and family engagement, including hospital in-house instructional videos. They developed a video script based on their review of 23 falls prevention videos. Eventually, they broadcasted their falls education video from the script on a dedicated channel of the facility's internal television system. As part of their study, Opsahl et al. (2017) quoted the range of fall rates from

various studies they reviewed to be 3.3 to 11.5 falls per 1000 patient-days. Additionally, Cuttler et al. (2017) found that patient education videos contributed to reduced fall rates in their research locale from 4.78 to 3.80 falls per 1000 patient days.

Meanwhile, in their registered protocol for systematic review, Slade, Carey, Hill, and Morris (2017) indicated that patient- and healthcare personnel-focused education and training are an emerging strategy for falls prevention. Slade et al. (2017) cited a trial offering individualized patient education with feedback from personnel, which reduced fall rates substantially by 40%. Among the techniques harnessed for patient education are multiple modalities (i.e., one-on-one, group telephone, written, and ehealth), and online applications and programs.

Hilscher, Niesen, Tynsky, and Kane (2017) reported scripted pre-procedural fall risk patient education as another emerging current practice in falls prevention education. This practice is an example of scripted nursing communication utilized to ensure consistent and standard dialogue in different healthcare contexts. Hilscher et al. (2017) recorded zero patient falls in the year following implementation of the scripted pre-procedural patient education even for high-risk patients when this aforementioned strategy is coupled with patient assistance by nurses trained for the purpose. Hilscher et al. (2017) also showed that the efficacy of scripted pre-procedural fall risk patient education in current practice is grounded on increased patient awareness and receptiveness to assistance.

Furthermore, Hill et al. (2016) revealed a commendable practice on falls education in terms of analyzing staff response to falls prevention initiatives patterned

after the Safe Recovery Program. Accordingly, an external educator was commissioned to conduct individualized falls prevention education to patients who were assessed for good cognitive levels of at least a score of 23 in the Mini-Mental State Examination. Healthcare staffs were also afforded training to elicit their unqualified support for the falls prevention program. After which, healthcare staffs' feedbacks were solicited to gain insights about their perceptions regarding the program for quality improvement purposes. On the whole, Hill et al. (2016) noted that patient education provided to those with good cognition levels showed beneficial ward-level effect via enhanced motivation and work practices among the healthcare staff. The researchers also indicated that a positive team culture geared at falls prevention contributed to the gains of the falls prevention education program.

Interestingly Houry, Florence, Baldwin, Stevens, and McClure (2015) provided an interesting insight from literature to support what emerged from current nursing falls education practices. The research team cited recommendations from the AGS and BGS as they described a multifactorial strategy involving assessment of fall risk and implementation of interventions customized for the patient needs. They, however, decried that before CDC developed the fall prevention intervention, Stopping Elderly Accidents, Deaths and Injuries (STEADI), multifactorial interventions were not adopted to practice. Houry et al. (2015) found that reasons for such shortsighted disregard of evidence were the clinicians' dearth of knowledge on fall risk assessment and fall prevention, in general. Aside from the STEADI toolkit, CDC addressed knowledge deficit issues via training, handouts, and development of a clinical decision support system (CDSS) for fall

prevention. Houry et al. (2015) clarified that the CDSS was intended for integration with the electronic health records system.

While space constraints will not allow a more detailed and extensive revisit of more literature, it was apparent from the foregoing findings that there is ample support to the general consensus in nursing literature that falls education can help prevent falls and consequently reduce fall rates. I stand with the foregoing position despite the current reality that falls remain a current and significant challenge in healthcare. However, I also support Houry et al. (2015) about the need to tailor fall interventions to the patient's fall risk. Their insight about risk-informed interventions may well be the key to a more successful present and future fall prevention strategies in nursing practice.

Past Strategies and Standard Fall Prevention Practices

Grueninger, Duffy, and Goldstein (1995) argued that the foundational activities of patient education begins in the outpatient clinic or in the emergency room. These are past strategies which have transcended to standard practice even today. Among the standards of practice include counseling, information dissemination, and providing instruction to patients during the medical interview. In general, these standard practices have been observed to contribute towards the improvement of patients' health outcomes, mitigate risk behaviors and factors, and lessen morbidity and mortality. The latter statement is true even for fall issues. For this part of Section 2, I accessed older studies from 2009 and earlier to locate other past strategies and standard fall prevention practices, older studies were accessed, from 2009 and earlier.

Hill et al. (2009) compared the efficacy of educational training visits by a healthcare professional added to customized patient education intervention for falls minimization and usual care against an interventional approach comprising only of customized education and usual care for the control group. The educational intervention included activities geared for the promotion of falls prevention and was delivered via two modalities – digital video disc (DVD), and print workbook. Hill et al. (2015) found that individualized patient falls education was effective on the basis of the trial results.

In another study, Haines, Hill, Bennell, and Osborne (2006) gathered a subset of patients for an educational falls intervention from the larger set of patients enrolled in a randomized controlled trial of a falls prevention initiative. Haines et al.'s (2006) education program comprised of one-to-one sessions with the occupational therapist who was part of the study research team. The session goals include facilitation of interactions between patients and the therapist regarding difficulties in adhering to instructions by the healthcare personnel. Thus, the therapist has the discretion as to the length of the sessions, which typically ranged from 15 to 35 minutes. Haines et al. (2006) designed the educational curriculum to tackle: (a) the nature, consequences, location of falls and why these falls occurred; (b) fall risk screening; (c) mechanisms of falls; (d) fall prevention steps, particularly involving hospital processes; (e) a how-when-where-why quiz on previous fall experiences; (f) goal setting and strategy formulation; and (g) finalized goals and review of compliance with strategies. Haines et al. (2006) found that the intervention group had significantly lower fall incidence than the control group. Thus, they

recommended patient education as an integral part of a multifactorial fall intervention program.

Peterson and Berns (2006) documented another study on patient falls education which involved a large-scale implementation of falls prevention with a mandatory educational component for healthcare staff. Their study covered over 50 clinic sites across five countries. Peterson and Berns (2006) conceptualized the educational intervention in their study to include a four-month training for the healthcare staff, primarily laboratory personnel, conducted in multiple sites. The research team selected laboratory personnel for the training phase because four-fifths of *syncope* or fainting episodes occur in the laboratory. However, nurses, medical assistants, and X-ray staff were also selected as secondary participants to reform nursing practices concerning falls based on a review of the process of care for fainting cases. Peterson and Berns' (2006) mandatory education component registered reduced falls from 36% to 12% of syncope cases Eventually, Peterson and Berns' (2006) educational component was developed into a self-learning PowerPoint program and made available online via the University of Wisconsin Medical Foundation intranet and integrated with the site's orientation for new employees.

Tricco et al. (2017a, b)'s twin studies tackled fall prevention practices in the 1990s. The research team observed that patient level-quality improvement had been implemented, which includes patient education, reminders and motivational interviewing, among others as fall prevention intervention. By the 2000s, Feder, Cryer, Donovan, and Carter (2000) noted that falls education began to be included in guidelines for falls

prevention. They cited the following practices known to provide beneficial contribution for falls education: (a) after-discharge home occupational therapy, with advice and/or referral home safety assessment; (b) individualized treatment plans with education of healthcare staff for residents with fall history; and (c) program of medical and environmental assessment with risk education and healthcare referrals (Feder et al., 2000).

In another study, Shever et al. (2010) revealed more than two-thirds of the nurse-manager participants in their research were not sure if the fall interventions used in their respective hospitals were evidenced-based. Meanwhile, the other participants admitted that their fall intervention policy were either borrowed from another facility or from research or scales that were not necessarily associated with falls. This is an unfortunate development because if even the nurse managers from the nationally-representative study manifested a dearth of knowledge about fall interventions, the junior nurses and other healthcare personnel in my DNP project site may have the same knowledge deficit.

Thus, for my DNP project, I ventured to evaluate improvement in fall rates as an outcome of the voluntary fall prevention education of the patients after the facility's targeted training of nurses and other staff who were identified as part of the facility's patient safety program. However, to be very clear, training of nurses and other personnel is not part of my project evaluation. I believe that this information is an important background for my study. Given that my project site's revitalized fall prevention program started even before this quality improvement project was proposed, all facility personnel in the project site's patient safety program were assessed pre- and post-training

to find evidence on the success of the facility's knowledge-building goal as a significant component of patient safety. To be very clear, even if the nurse training is not part of my project, knowledge-building is an important requisite before patient education on falls prevention can be successfully carried out. Loan et al. (2018) offered an explanation of the latter argument in sufficient detail in their position paper.

My DNP project was motivated by the emerging current state of practice in patient falls education – educating both the patients and healthcare staff, as well as practical training of healthcare staff (Cutler et al., 2017; Francis-Coad et al., 2018; Hill et al., 2016; Hilscher et al, 2017; Houry et al., 2015; McKenzie et al., 2017; Opsahl et al., 2017; Slade et al., 2017). I analyzed the educational component of the fall prevention program, which began after the one-year training of nurses and other personnel. They were trained during the transition period between the old patient safety and fall prevention program to the current revitalized holistic fall prevention program. My project also evaluated the customized patient education intervention, as part of patient fall safety routine, verified if patient education contributed significantly in reducing inpatient fall rates, and if this educational component is sustainable.

Local Background and Context

The patient safety and fall prevention committee, together with the facility management designed the fall prevention component of the facility's patient safety program more than 3 years ago. They carried out this action in response to facility's fall rate, which reached the 65th percentile in the middle of 2015. The facility management executives issued directives to all healthcare personnel in the project site consisting of a

four-fold revitalized fall prevention strategy: (1) take up the cudgels on behalf of all patients to raise the bar in the site's fall safety standards; (2) contribute in reducing, if not totally eliminating, hospital-borne costs associated with inpatient falls which were not anymore reimbursed by Medicare since the last quarter of 2018; (3) enhance patient satisfaction for healthcare services rendered, and hence, earn their goodwill; and (4) significantly improve the facility's overall healthcare provision in order to lessen or stop the occurrence of fall events, by educating both the patients and the healthcare personnel.

My quality improvement project is, therefore, relevant to the fall rate challenge in the project site. The practice-focused questions I posed also addressed the directives. I believe that once the fall events are reduced or stopped, additional hospital costs incurred in treating injurious falls will also be lessened or avoided. Preventing fall events not just in hospitals, but also at home and in other environments, suggest a holistic fall prevention approach which was made possible through the integration of patient education and training *vis a vis* family engagement. The quality of healthcare services is not only enhanced and the reduced fall rates do not only improve patient satisfaction, but also raises the bar in patient fall safety standards. Most importantly, with almost four years into the patient fall prevention and safety interventions in effect, it is about time to ascertain whether or not the site's quality improvement initiative succeeded in its goals. These goals include educating the patients and enhancing the capability of the project site's personnel to deliver improved and safer healthcare so that relevant action and measures can be taken in response to the findings.

Relevance of the Problem

As earlier mentioned, the institutional context is a facility that provides palliative and rehabilitative services to clients. Most of the clients are, therefore, confined in the facility under chronic or longer-term care. While all hospital patients, in general, should be safe from falls, palliative and rehabilitative patients should reasonably be protected for injurious falls because of their more fragile condition. It is unimaginable for a bone cancer patient or a patient still recovering from hip fracture or related injury to suffer a fall because this might worsen the prior injury. Patients are predominantly 40 years old and older adults. Thus, no problem can be more relevant in the DNP project site than to ensure that all falls are prevented or fall rates be significantly reduced. The mission of all personnel in the facility is to provide excellent healthcare and the best quality of life to its patients within the constraints of their respective illnesses/injuries. Furthermore, the strategic mission of all personnel in the facility is the provision of a caring environment for patients through their dedication, continuous improvement of healthcare services, and committed advocacy for patient safety.

Institutional and Regulatory Context

There is a total of 60 beds in the facility. The facility is on full capacity 90% of the time. Structurally, equal numbers of beds are apportioned for palliative care (with oncology and sickle cell anemia patients) and rehabilitative care patients, although more beds may be assigned to the unit/department with more patients. My project site is headed and managed by the facility director. Four nurse managers/supervisors, four laboratory technicians, two pharmacists are working in alternate shifts, and an average of

48 nurses work in eight-hour shifts at a nurse-to-patient ratio of 1:2 to 1:4. The supervisors determine the nurse to patient ratio depending on the condition of the patients in terms of dependence/independence for nursing staff assistance. As per staffing schedule, some nurses may work on two non-consecutive shifts in some days within eight-to-ten-hour gaps to ensure that nurses get adequate rest and sleep in-between shifts. The nurse supervisors design shift schedules and breaks on a staggered basis so that all patients are properly monitored 24/7 and assisted whenever necessary.

Historically, the typical patient demography consists of 20% who are dependent, 30% who are partly independent or those who are classified under the Barthel index to be on assisted independence, and 50% of the patients are independent. The modified Barthel index assesses patients based on 10 functional activities and a total score of 20 points: bathing, bladder and bowel control, feeding, dressing, grooming, mobility, stair climbing, and transfer between bed and chair. The transition point from independence to assisted independence is 14, whereas scores of 10 and below are classified as assistance dependence or dependent on caregivers and/or nurses (Rattray & Aitken, 2019). At full capacity, therefore, for each shift on a typical day, eight nurses care for independent patients, 6 nurses take care of patients classified as assisted-independent, and 6 nurses assist patients dependent on caregiver service. Patients are predominantly 40 years old and older adults.

The facility management executives ensure that nurse staffing considerations at the project site conforms with the Registered Nurse Safe Staffing Act of 2013, which empowers registered nurses to design the optimal nurse staffing in their respective

institutions. Nurse supervisors see to it that optimal nurse staffing can efficiently enhance the quality of care and protect the patients from unintended harm, such as fall accidents. The provisions of the legislation also include a requirement for healthcare facilities to put up committees, which will oversee the design of nurse staffing plans on the basis of the number of patients, the severity of their conditions, and adequate manpower and technological resources. Furthermore, a provision of the act also stipulates hospital/facility accountability for the safety of patients, penalties for violation of the staffing provisions, as well as whistleblower protections for people reporting staffing discrepancies to the authorities concerned (Finkelman, 2015).

Definition of Terms and Operational Processes

The following terms and operational processes relevant to my DNP project are defined to facilitate overall understanding of the salient points of the dissertations. I alphabetized the terms and operational processes for ease of location.

Discharge Safety Guidelines: A component of the patient falls education that tackles safety precautions that when complied with will help the patients to prevent falls at home or outdoors, which familiarizes patients with environmental hazards that may cause falls and explains how these hazards may be fixed or eliminated. The materials were adopted from the program STEADI and evidence from research. The STEADI (2017) brochures, *Check for Safety: A Home Fall Prevention Checklist for Older Adults,* and *What YOU Can Do to Prevent Falls,* were distributed to patients either as part of the patient education sessions for those who opted to join or before discharge for patients who did not take part in the program. A printed checklist handout is distributed

explaining how to evaluate paths, furniture, easy access by patient of specific items, floor, and lighting.

Educational Needs Assessment Survey: A 20-item questionnaire administered to all patients who opted to voluntary participation in the project site's falls education program. The tool was adopted from the tool StopFall – Fall Prevention Center of Excellence (2019) needs assessment by the site's patient safety and fall prevention committee. The first seven items are demographic and the rest inquire about fall details which can be used to customize the educational intervention based on the context and the patient's specific needs.

Fall Risk Factors: This component of the patient education curriculum discusses the circumstances and conditions which increase the likelihood that a person will suffer from a fall. The lesson module includes both extrinsic and intrinsic, where two or more factors from either or both may lead to falls. Among the most frequently discussed in the patient customized modules are: acute illness, age, balance, gait and strength deficits*, behavior and choices*, chronic conditions, cognitive deficits, and sensory deficits* (individual or intrinsic); alcohol/drugs*, assistive devices*, footwear*, home/neighborhood features*, medications*, and support from caregivers* (environment or extrinsic). The foregoing factors marked with asterisk are modifiable risk factors. During the sessions, any possible environmental hazards for falls are pointed out such as in the patient rooms and/or bed, which may not be included in the environmental checklist used during the hourly rounded are discussed with the patient.

Hourly Rounding Advice: A component of the patient education module which aims for the patient's optimal use of the hourly rounds. The project site adopted the elements of the hourly rounding tool as standard of the hourly rounding protocol after the version from AHRQ (2013) was modified by the project site's patient safety and fall prevention committee in consultation with the nursing managers/supervisors. The tool recommended by the AHRQ (2013) was adapted from Meade, Bursell, and Ketelsen in 2006 with permission. The advice briefs patients about how they can effectively use the hourly rounds for their specific needs at the moment aside from, among others, pain assessment, assistance for anything that the patient needs at that hour, reminder to the companion to refer all patient concerns before the next hourly round by using the call bell/call light button, and not leaving the patient at any time without informing the nurse station, for assistance.

Medication Fall Risk: On a case-to case basis, particularly the medication fall risk score, patients are educated about their fall risk and given individualized guidelines to prevent falls. The educational material for this essential topic in the patient education program was guided by the tool recommended by the AHRQ (2013), which was developed by Beasley and Patatanian in 2009. The developers provided permission for use of the aforementioned tool in hospitals or other healthcare facilities.

Role of the DNP Student

Professional Context

I have the privilege of working as one of the nurse supervisors in the project site. Although I am not the lead person in charge of the facility's overall patient safety and fall

prevention program, I served for a year on the fall prevention committee as a member of the committee's rotating personnel with direct contact to the facility patients. One nurse supervisor is designated on a rotating basis each year by the other members of the committee so as not to significantly disrupt the typical day-to-day operation of the project site. The nurse supervisor who sits in the committee is assigned a co-supervisor, from among the senior nurses to take over during the supervisor's absence in the operational schedule while performing duties with the committee. The co-supervisor is tasked to provide a report on a daily basis to apprise the nurse supervisor serving in the committee during meetings and deliberations.

As a member of the committee, my duties are to provide insights to the committee about fall information, such as risks and concerns about at-risk patients that may be taken up and addressed by the committee. I was also assigned to administer the facility-wide *Hospital Survey on Patient Safety* Culture (Sorra et al., 2016a, b) and to prepare and present a report of the findings. Thus, I have first-hand knowledge about the project site's fall prevention program and the ensuing quality improvement initiatives.

Role, Relationships, and Involvement

My role in this project is sole evaluator. Given that I am connected with the project site, I was given the leeway to access the data I need, provided that patient data, if needed will be anonymized and the necessary permissions from the concerned facility department are obtained. When I officially requested permission to use the facility's fall education program component of its fall prevention program and to evaluate the merits of the quality improvement initiative in the context of patient education for the project, I

was requested by management to sign an agreement that all data retrieved from the charts by the committee for monitoring or from summarized reports furnished by the IT office be treated under the strictest standards of privacy and confidentiality. In other words, I committed to uphold the ethical principles of research. Other conditions of the permission given are the need to furnish the management of the complete project documentation once it is defended with the University and to present the findings and recommendations to the committee and management in one session.

I am privileged to consult with the committee on matters of the project that I feel the need to discuss with the fall prevention committee, such as reports which I am not anymore furnished after my stint as a committee member. I have actually consulted the committee many times because after my involvement as committee member had ended, I am only aware of the operational aspect of the initiative as nurse supervisor. However, I do not have an overall view of the initiative, so the committee had been very helpful, so far, in providing significant inputs for my project. I have had direct contact with many of the patients in the past, precisely before this project was proposed, but not anymore after I used the fall prevention initiative as the subject of my DNP proposal. During that time, patients who opted into the patient education program and I had the chance to casually talk with them. They provided feedback about the intervention, but I later approached those who are still in the facility or those who had subsequent stay(s) in the facility to ask for their consent beforehand if ever their inputs in the follow-up talks I had with them in the past could be used as inputs in my DNP project. Many of the patients readily consented, but a few said they are still thinking about providing informed consent.

To clarify, I just had direct contact as a nurse in the project facility, but not as researcher. I never had a hand in data collection when this project was proposed as a DNP project and most of the data that were analyzed were collected as part of facility operations under the fall prevention program, particularly the patient education component. I, therefore, hoped and expected that this project qualified as preapproved by the Institutional Review Board (IRB) under the third category of data sources preapproved for quality improvement doctoral project (i.e., Partner Organization's Internal Data: Operational Records and Other Artifacts) based on Walden University (2017b, p. 7)'s *Manual for Quality Improvement Evaluation Projects*.

I had a number of roles in this scholarly endeavor. I documented on the progress of the quality improvement initiative for falls in terms of the patient education program. Given that empirical data is involved, my role also includes statistical analysis (descriptive) of data using the principles of statistical process control to create run charts, as discussed in Perla, Provost, and Murray (2011), and interpretation of the findings. My primary motivation was to contribute my academic knowledge and acquired skills to evaluate and document the patient safety quality improvement initiative in terms of the patient education program.

Motivations and Perspectives

My initial motivation was to work on a project about diabetes among geriatric patients because this is a problem in the project site, too. However, the other nurse manager suggested that I focus my project on falls because this was a more pressing problem in the project site, considering the nature of the healthcare service we specialize

in. When I checked the statistics from previous hospital reports, I realized that my colleague has a point. Complications resulting from uncontrolled diabetes were only in the 44th percentile in 2016, whereas injuries from patient falls were in the 65th percentile. There was yet no summary report for 2017 during that time because the year has not ended. This was an average of about 7 falls in a month. Meanwhile, total falls were roughly in the 75th percentile, and repeat falls were almost in the 30th percentile.

With prior knowledge that I am pursuing advanced studies, I was also encouraged by the facility manager to help in the project site efforts to document the progress of the fall prevention program. Wanting to contribute to the resolution of the facility's fall statistics, I was motivated to concentrate my DNP topic on the project site's fall education program because covering the entire fall prevention initiative of the facility appears to be very broad in scope.

My perspective in doing this project is health being a totality of behavioral, biological, psychological and social conditions in the environment within which people interact. Fall prevention, like disease prevention, therefore, necessitates attention and focus on the entire social system as the environmental context. My efforts brought me to scrutinize a chunk of this social system in terms of patient falls education. The conceptual framework I used for this endeavor is aptly articulated in the socio-ecological model of health and the theory of ecological injury prevention. Bronfenbrenner (1979/2009) enunciated the socio-ecological model of health, whereas Rubens and Shehadeh (2014) substantiated the relevance of the theme of my project. Haddon, as discussed in

Allegrante, Hanson, Sleet, and Marks (2010) introduced the theory of ecological injury prevention.

I have no biases about the topic of my DNP project because the facility manager made it fair and square that I have to honestly report whether or not progress is being made *vis a vis* the site's time–bound goals. Thus, I am in no pressure to sugarcoat the findings. I cannot be biased about the facility's progress in the patient education component of the fall prevention initiative, which the facility calls 'holistic'. I believe that only factual reporting can facilitate realignment of interventions with the actual needs of the program in terms of the education component.

Summary

Falls are a persistent problem in the project site because of the type of healthcare services it provides and the type of patients it serves – geriatric and rehabilitation patients. According to Hill at al. (2015), those from geriatric and rehabilitation units are the most fall risk-prone patients. Like any other healthcare facility, the project site and its personnel strive hard to implement fall safety measures. My DNP project evaluated the existing quality improvement initiative for the patient education component of the fall safety and prevention program. This section outlined the models and theories that informed the project about quality improvement evaluation, particularly the standards of the CDC (1999) evaluation framework, Moore et al. (2014) customized CDC model, and he HRSA (2011 guide), which were summarized and interpreted from the perspective of the Social Ecological Model and Haddon's theory of ecological injury prevention. The quality improvement framework for patient falls education were analyzed in terms of four

areas: systems processes, and patient focus; team approach; use of data; and implementation.

This section also includes a synthesis of primary literature, and foundational concepts. I concisely discussed and traced the history fall prevention and the current state of nursing practice on patient education, which includes, among others: (a) customized or individualized approach; (b) interdisciplinary teams; engagement and connections; (c) interprofessional collaborative efforts in educating not just the patients, but also the healthcare staff charged with caring and service delivery; (d) multilevel approaches – staff, facility, and immediate healthcare community; (e) a range of multifactorial strategies, which integrates fall education at the core of the program; (f) multiple modalities – personal, telephone, written, electronic; (g) scripted patient education prior to fall-risk procedures; (h) training in multiple settings; and (i) utilization of CMO configurations to consolidate the results of initiatives. Meanwhile, educational resources currently utilized in nursing practice include intranet television system, personalized falls strategy checklists, posters, professional training visits, and videos.

While patient safety is a primordial concern among all healthcare facilities, my project site, which provides palliative and rehabilitative care, is most concerned in preventing patient falls. In other words, the patients cared for in the facility are most fragile. Accordingly, patients can be protected from experiencing any confinement-related injuries that are generally regarded as preventable only through an efficient fall prevention program. In the next section, I discussed the plan for collection and analysis of

evidence of improvement in fall rates as a result of the patient education program for fall prevention.

Section 3: Collection and Analysis of Evidence

Introduction

In this section of the DNP project, I described the protocol and standards used in the collection and analysis of evidence for the evaluation of quality improvement in the project site's voluntary fall prevention patient education program. My project acknowledges the role of advanced age as a common reason for reduced or lower level of PA or inactivity among older adults due to frailty, muscle weakness and fear of falling. Klenk et al. (2015) provided the context for the preceding argument. Furthermore, considering that many patients at the project site are geriatric or undergoing rehabilitation for some illness, surgery, or accidents, the facility's patient safety program included a revitalized fall program using multifactorial interventions featuring a patient falls education component.

I reiterated the practice-focused questions of the in the next subsection. I then identified the sources of evidence and I explained these in sufficient detail. Quality improvement evaluation entails an analysis of patient outcomes, roles and responsibilities of the healthcare personnel, as well as systems and processes. Two sources of evidence were collected – data from the project site's archived operations, which were collected even before this project was conceptualized, and on-going operational data collected since 2016. Analysis entailed quantitative methods with the aid of run charts, a staple in quality improvement within the context of the allied health sciences, including nursing.

Practice-Focused Questions

The Local Problem, Gap-in-Knowledge, and Practice-Focused Questions

A cumulative fall rate of 86 per annum or about eight falls per month, on the average, is a worrisome statistic at the project site, where patients are predominantly geriatric or injured and undergoing rehabilitation. Translated in terms of percentile rank, falls at the project site rank at the 65th percentile of the various issues and challenges in the hospital records in 2014 behind cancer-related pain, pleural effusion, syncope, chronic obstructive pulmonary disease, infection, cardiac arrest, etc. In fact, among the most pressing healthcare issues in the facility, falls are the only preventable challenges which are on the top 12.

The facility management executives and members of the fall prevention committee resolved after a series of meetings, that falls occur at the project site not necessarily because of a gap in nursing practice, but due to fall education and training needs that have not been addressed in practice. Thus, the executives and committee members' conclusion about the observed gap was more of a knowledge deficit or a gap in knowledge, rather than a gap in practice. Houry et al. (2015) revealed similar healthcare experience in their work. Later, in after-fall huddles at the project site, nurse supervisors also confirmed the gap pointed out during the executives and committee members' meeting series. Nurse supervisors conducted after-fall huddles as one of the interventions introduced in the project site's revitalized fall prevention program.

I posed the following practice-focused questions to evaluate the falls education components of the project site's quality improvement initiative for fall prevention:

1. Did the facility's voluntary fall prevention education program help reduce fall rates?
2. Is the facility's voluntary fall prevention education program sustainable?

Purpose

From the perspective of health and well-being, no fall rate will ever be acceptable, because falls in the hospital, at home, or anywhere else are preventable. I found from the project site records that falls increased from the 50th percentile in the early 2000s up to the 65th percentile in 2014. While nurses and other healthcare personnel in the project site strive to prevent falls, they have not been very successful prior to 2016. From the facility's revitalized fall prevention program, I evaluated the merits of the program's fall prevention education component, with the following four-fold purpose: (a) Create run charts to monitor trends and patterns pertinent to the fall prevention education launched; (b) Evaluate the run charts for their state of operation; (c) Develop recommendations for the facility's fall prevention education program; and (d) Present the run charts and the corresponding recommendations to the stakeholders of the fall prevention program. Thus, through the comparison of run charts, I assessed whether: (a) the program reduced the fall rates of the target population, which comprise the majority of facility patients; and (2) the patient education with family engagement intervention for fall prevention is sustainable.

Operational Definitions

I operationally defined the following key aspects of the project for a better understanding of the main components of the revitalized fall prevention program and

other processes instituted so that the effectiveness of the patient falls prevention education interventions can be measured and evaluated.

Fall Rate: This variable is the number of falls per 1,000 occupied bed days. To date, reported fall incidents have not all been computed yet in terms of this unit because the hospital used to measure falls as a percentile rank, but a committee-designated personal had begun work in this regard.

Knowledge Component: This aspect of the fall prevention program was directed to both healthcare personnel (nurses and other staff) and the patients. Healthcare personnel were presented a series of knowledge-building modules in the form of seminar-workshop. The AHRQ coordinated the activities for guidance in the 5-module training program, the skills training (i.e., the workshop), and use of the fall prevention toolkit. Only the concerned personnel were exposed to the relevant modules to maximize knowledge- and capacity-building. Meanwhile, patients who have opted into the patient module and/or the companion- or family-module of the fall prevention education program were offered educational sessions.

Patient Modules. Patient modules for fall prevention education were developed by the nurse supervisors in-house. They adapted the module content predominantly from the CDC's (2017) *Stopping Elderly Accidents, Deaths and Injuries* (STEADI) Program. Nurse case managers assigned to each patient delivered the face-to-face training modules to each patient customized for their specific needs after the *Stay Independent* brochure had been initially discussed focusing on the falling risk checklist. AHRQ (2019) provided

ta downloadable falling risk checklist, which the facility uses as the basis of the customized patient education.

Sources of Evidence

I retrieved evidence for the two practice-focused questions consisted from verified sources released by national organizations and programs, including statistics, relevant publications, and peer-reviewed journals. I used information from the CDC, AHRQ, Fall TIPS, and STEADI, and the information retrieved contributed not only to the gathering of evidence for my project but also for the development of the facility's fall prevention education program. I also used peer-reviewed evidence in conceptualizing the project, in writing the literature review, and in gathering practice-focused evidence, including: Chippendale and Raveis (2017), Cuttler et al. (2017), Feder et al. (2000), Fehlberg et al. (2017), Francis-Coad et al. (2018), Grueninger et al. (1995), Haines et al. (2006), Hill et al. (2009, 2015, 2016), Hilscher et al. (2017), Houry et al. (2015), Johnston and Magnan (2019), McKenzie et al. (2017), Musich et al. (2017), Opsahl et al. (2017), Peterson and Berns (2006) Shever et al. (2010), Slade et al. (2017), The Joint Commission (2015), Tricco et al. (2017a, b), etc. I used resources prior to 2014 to gain insights from the past state of nursing practice on patient education.

The first research question was: Did the facility's voluntary fall prevention patient education program help reduce fall rates? To answer this question, I computed fall rates from weekly fall incident reports. I then compared the run charts of fall rates from the old program (2014), to transition period (2015), and to the revitalized fall prevention program (2016–2019).

Meanwhile, the second project question was: Is the facility's voluntary fall prevention patient education program sustainable? I analyzed the run charts of the fall rates to determine trends in fall rates. I then analyzed the injuries suffered secondary to falls to ascertain if fall reduction resulted in reduced injuries or less severe injuries. After which I calculated projection using practical assumptions to evaluate sustainability of the voluntary patient falls prevention education program.

Sources of Data

I used sources of data and evidence which helped address the practice focused questions and support the purpose of the project. In the first practice-focused question, the fall prevention program through the patient education initiative connects to the purpose of zero falls. The connection may be gleaned from my earlier argument that no percentile rate for falls will ever be acceptable because falls in the hospital, at home, or anywhere else are preventable. If zero falls cannot be achieved in the initial years of implementation, my expectation for the patients falls prevention education program is at least reduced falls compared to the 50^{th} to 65^{th} percentile ranks reported for the project site prior to 2016. Furthermore, the patient education and family engagement component of the revitalized fall prevention program in the first practice-focused questions was selected the DNP project because of education and training needs in fall prevention which remain unaddressed in practice, as indicated in Chippendale and Raveis (2017). The facility executives and committee members included family member/companion/ sitter engagement education and training as part of the 'holistic' fall prevention program given that 'the gap in practice pertains to contextual elements of fall prevention

interventions in terms of training and education beyond the context of the project site (i.e., at home, and in other places).

Collection and Analysis of Evidence

The facility executives and committee members instituted the collection of data as part of the measurement processes at the project site for evaluating the progress of the revitalized fall prevention program, which included the patient education component. Thus, in the context of this project, data were predominantly archival and operational. This suggests that facility nurses have already collected some data even before my DNP project had even been proposed and/or conceptualized. Additionally, because nurses and other personnel have collected data for the project site's fall prevention program, it is understood that all data for the patient fall education program were archival and operational. However, the fall prevention committee acknowledged the need to more convincingly assess the patients' perspective of the fall prevention interventions. Thus, the nurse supervisors and the committee members developed a five-question patient survey in 2015 for facility purposes. They implemented it used in 2016 and extended its use in the following year to cover all aspects of the education and training component as perceived on the patient end. The evaluators of my DNP project proposal earlier on tapered off the scope of my project and excluded evaluation of patient perceptions of the education component for manageability. I endeavored to use only data sources that are well aligned with the practice-focused questions. Thus, I did not anymore use the patient perceptions data.

I formulated the second practice-focused question based on the definition of sustainable healthcare proposed in Smith (2012):

> A system balanced on sound environmental, social, and economic approaches that eliminate negative social, environmental, and economic impacts while providing a service that prevents or ends environmental and human illness; continually working to maintain human and environmental health, while empowering, promoting, and preserving environmental and social quality for the sake of Earth, and present and future generation (p. iii).

I volunteered to process the fall reports and the injuries sustained data collected in the facility so that these can be used for this DNP project. For anonymity, the nurse case manager assigned for each patient numbers the reports and matches patient details. They store these details in a flash drive which is kept under lock and key in a secure metal file cabinet in the project site premises. If any need arises for me to trace the personal details of the patient for the purpose of this project which do not contravene ethical principles of research, authorized personnel, including myself can view the details under conditions of the strictest privacy and confidentiality with express permission from the facility manager and the patient safety committee chairperson.

Analysis and Synthesis

I addressed both practice-focused questions by creating and comparing run charts and making the necessary recommendations about the fall education program and how the stakeholders can benefit further from the interventions. I compared run charts of the old program (2014), with those from the transition period (2015), and the revitalized fall

prevention program (2016-2019) to visualize if fall rates were, indeed, reduced. I also compared run charts of fall rates and injuries among participants to assess if the education component of the program was effective in helping reduce fall rates. I calculated sustainability of the patient falls prevention education program using a scatter plot of annual fall rates and fall injuries against the respective years (2014-2019) I also used the automated regression equation generated in MS Excel (2016) to project sustainability.

Summary

In Section 3, I discussed, in sufficient detail, the plan for the collection and analysis of evidence. Additionally, I also outlined the protocol and standards used in the project site in the collection of operational data. I restated the two practice-focused questions and linked them to the purpose of the DNP project. I also defined some terms operationally to offer the readers a better understanding of the key components of the project and the processes undertaken to put up an effective set of interventions. I included the terms fall rate, knowledge component, and patient modules, etc. I also endeavored to describe the sources of evidence and data relation to the project purpose, as well as the analysis strategies used to address the practice-focused questions. Finally, I provided a concise discussion of the processes adopted for documentation of the project as a primer for the presentation of findings and recommendations in the next section.

Section 4: Findings and Recommendations

Introduction

In a facility specializing in palliative and rehabilitative care, which I used as locale of this project, patients are predominantly geriatric or injured and undergoing rehabilitation. In such facility as my project site, management and the patient safety committee did not find a cumulative annual fall rate of 86 and above, or a 65th percentile rank in terms of a set of other healthcare issues and challenges monitored by this facility, to be acceptable by any measure. A group of researchers, particularly, Bouldin et al. (2013), Chu (2017), and Quigley (2015) argued that falls are regarded in healthcare as preventable events. The management and the patient safety committee in my project site share the views of the aforementioned researchers.

The fall prevention committee in my project site carried out meetings to deliberate about facility practices, which may have contributed to the aforementioned fall rates. The same committee identified after the deliberations that rather than a gap in practice, the falls are due to a gap in knowledge among both patients and facility personnel. The committee, therefore, concluded education and training needs of both patients and facility nurses and personnel have not been fully addressed. Accordingly, management and the committee members designated one component of the revitalized patient safety and fall prevention program to be a voluntary patient falls prevention education program. My DNP project evaluated the patient education component of the falls prevention program for effectiveness and sustainability.

I formulated two practice-focused questions for the purpose of evaluating one component of the facility's quality improvement initiative: the voluntary patient falls prevention education program:

1. Did the facility's voluntary fall prevention education program help reduce fall rates?
2. Is the facility's voluntary fall prevention education program sustainable?

For both practice-focused questions, the sources of evidence include: verified statistics released by reputable national organizations and/or fall programs; relevant publications, including peer-reviewed journals; education and training assessment results and similar data; digests of hospital fall and relevant records, and when necessary, de-identified patient fall records, other relevant data, and statistics. The evidence came from online information and releases, online research databases and physical libraries, in-house training-related assessment records, hospital reports, and patient medical records. I, therefore, carried out an evaluation analysis of the fall prevention initiative, which proceeded with a blend archival and operational data collected even before I proposed the project. I analyzed these data by creating run charts to monitor trends and patterns pertinent to the educational fall prevention education component. I evaluated the run charts for their state of operation. My observations of the time-ordered trends in the run charts facilitated visualization of variation and/or improvement in the variations

Findings and Implications

I present this subsection to reports the findings from the analysis and synthesis of the evidence. I also tackled unanticipated outcomes and limitations to highlight their

potential impact on the findings. The CDC (2019), through their social ecological model as the conceptual framework of the project guided my evaluation of the implications of the findings of the project. I discussed the implications in terms of the interplay among the four levels of factors that put patients at risk of a health hazard or protect them from the experience, such as falls. Additionally, I also reviewed the potential implications of the findings to the positive social change that Walden University (2017a) DNP projects are geared for.

Practice-Focused Question 1

In the first practice-focused question, I inquired if the facility's voluntary fall prevention education program helped reduce fall rates. For this question, I created run charts were created using MS Excel (2016) to analyze the evidence collected by processing weekly summaries of fall incident reports and related matters. I analyzed reductions in fall rates in terms of fall rates per thousand occupied bed days or falls per thousand occupied patient bed days (PTOPBD). Table 1 shows monthly summary statistics of fall rates from 2014–2019 expressed PTOBD or falls PTOPBD. The average fall rates per year, the frequency of falls per year, and the average occupancy per year are also exhibited in the table.

Table 1.

Fall Rates Per Thousand Occupied Bed Days: 2014–2019

Month	Fall Rates Per Thousand Occupied Bed Days					
	2014	2015	2016	2017	2018	2019
Jan	1.493	8.494	4.580	2.920	2.214	1.455
Feb	7.353	10.417	5.682	3.394	1.859	1.761
Mar	8.696	6.870	6.061	2.182	2.239	1.465
Apr	7.965	5.993	3.922	2.930	2.214	1.460
May	5.036	6.742	3.774	2.222	2.182	1.471
Jun	3.484	11.290	4.428	2.214	1.481	1.476
Jul	6.222	4.580	4.396	2.239	2.222	1.460
Aug	4.982	7.031	2.941	2.963	1.869	1.476
Sep	4.181	6.316	3.774	2.214	1.476	1.465
Oct	4.861	5.654	3.676	3.042	1.481	1.504
Nov	4.828	5.714	3.650	3.704	1.476	0.749
Dec	4.778	3.717	3.008	1.471	1.810	0.752
Mean Annual Rates	**5.323**	**6.902**	**4.157**	**2.624**	**1.877**	**1.374**
Total Fall Frequency Per Year	86	109	68	41	29	22
Average Annual Occupancy (%)	87.694	88.917	90.111	90.306	90.278	90.722

As reflected in Table 1, in 2014, with the facility on its old patient safety and fall prevention program with no patient education component yet on fall prevention, a total of 86 falls were recorded. Expressed in terms of the mean annual falls (PTOBD) calculated per month, there were 5.323 falls per thousand occupied patient days in 2014 with a mean annual occupancy rate of 87.674% for the 60-bed facility. The year 2015 was the facility's transition period from its old patient safety and fall prevention program to the

revitalized program. The revitalized holistic fall prevention program was conceptualized in the last quarter of 2014, and finalized for implementation in 2016, but all preparations, including staff education, training, orientation, and dry run were carried out in 2015. It is, therefore, not surprising that fall frequency increased by 23 and fall rates increased in 2015 by almost 30%. This is because while orientation, education, and training of staff were conducted in batches, only about 80%–85% of the facility's regular staff reported for their healthcare duties. The rest of them reported for the preparatory activities regarding the revitalized patient safety and fall prevention program, such as orientation, education and training, pre-dry-run briefings, and simulation activities, and other pertinent matters regarding the program.

Fall rates for 2014 were considered the baseline rates in this study. Although fall rates for 2015 were discussed, these were not considered inputs for improvement statistics. By the end of 2016, falls were reduced to 68, and compared with 2014 (the final year of the pre-voluntary fall education program year), the reported statistics in terms of frequency (i.e., 18 falls less) and mean annual rate fell by close to 22%. At the close of 2017, I observed same trend. The fall statistics were reduced in terms of frequency at 45 less than 2014 and 68 less than 2015. Mean annual fall rates in 2017 were also lower by over 50% (i.e., 50.70%) compared to 2014 and by almost 62% compared to 2015. By year-end of 2018, fall statistics were further slashed down by 57 compared to 2014 and by 80 compared to 2015. The reduced fall frequency in 2018 attenuated the fall rates by 65% compared to 2014 and by 73% compared to 2015. Fall rates were further reduced to 22 occurrences or by 74% compared to 2014 figures.

I analyzed the fall statistics from 2014–2019 using run charts to visually evaluate whether the descriptively downward trending fall statistics offer significant evidence that the voluntary patient fall prevention education program helped reduce fall rates. Figure 1 shows the run chart of the fall rate trends from 2014-2019, color-coded to distinguish one from the other. The median (Md) of all the monthly fall rates from 2014–2019 was also calculated to be 3.025 falls PTOPBD to facilitate visual comparison toward the zero statistic. To be clear, falls are considered to be preventable incidents (Bouldin et al., 2013; Chu, 2017; Quigley, 2015). Thus, the ideal goal in every healthcare facility is a zero-fall rate.

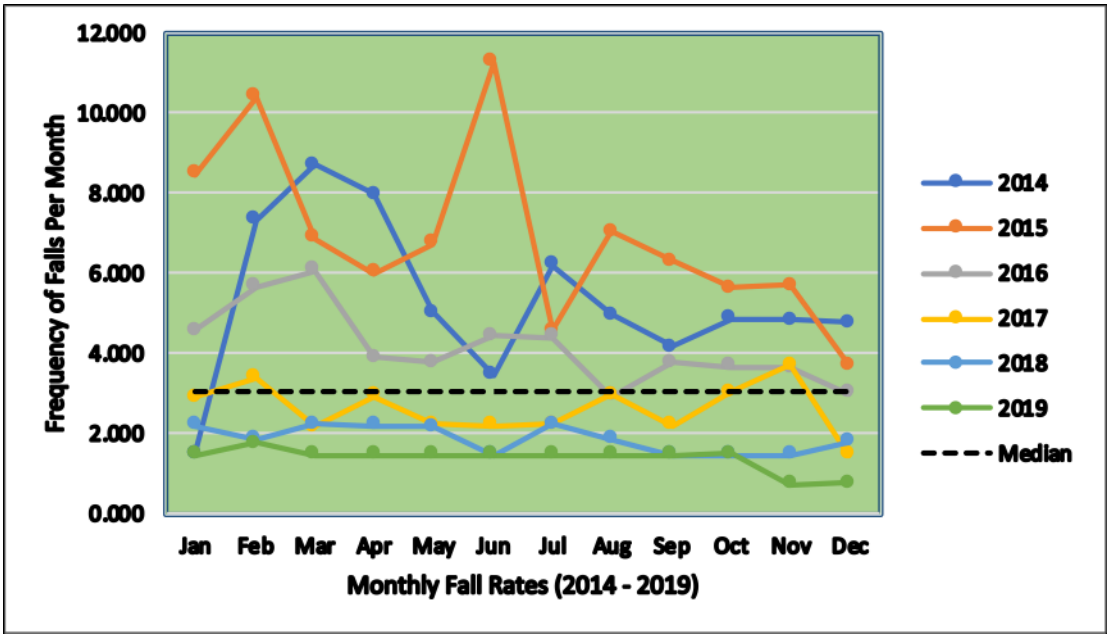

Figure 1. Run chart of fall rates per thousand occupied bed days for each month from 2014–2019

As shown in the monthly fall rates from 2014–2019, with respect to the median fall rate of 3.025 PTOBD, all facility data from 2014–2016 are well above the median.

By 2017, fall rates for some months were already below the median. By 2018, all fall rates for each month were below the median. In 2019, except for the October fall rate, all the months posted fall rates below 2018 rates. On the whole, therefore, I noted improvement in terms of lower fall rates.

In the succeeding run charts, I analyzed fall rates for each year from 2015–2019 and compared the fall rates with the baseline data (i.e., 2014). I inserted a red dashed line to show the ideal goal for the fall rates, which is the zero fall rates line. Also, in the following charts (Figures 2, 3, 4, 5, & 7), I compared fall rates for the years 2015–2019 with the baseline year, 2014. To clarify, I never expected 2015 fall rates to be reduced because it was the transition year in preparation for the launching of the revitalized program, and operations were carried out at 80%-85% of the typical healthcare personnel in the facility.

In Figure 2 below, I compared the monthly run charts for the 2015 (transition year) data with the 2014 baseline data.

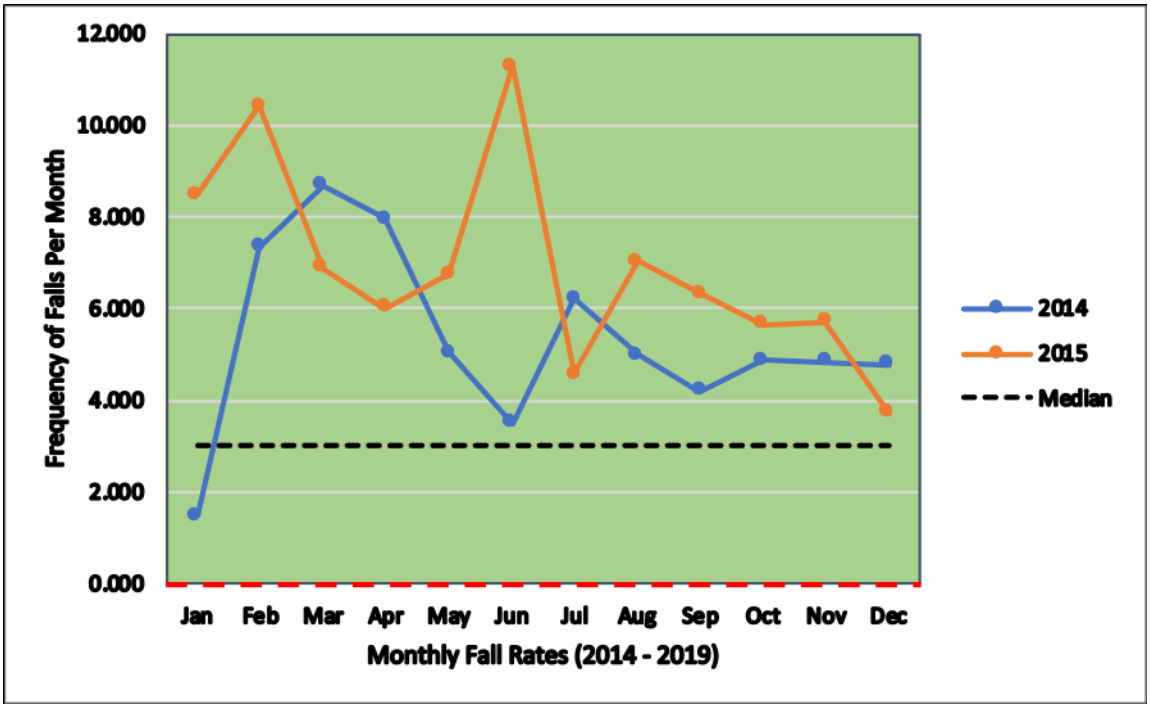

Figure 2. Run chart of fall rates per thousand occupied bed days for each month for 2014 and 2015

In Figure 2, I compared 2014 and the transition year 2015, and the comparison showed that except for March, April, and July, fall rates recorded for 2015 were higher possibly because during the transition period, only 80%–85% of the regular facility staff reported for their healthcare duties to learn more, train, attend the orientation and briefings in preparation for the revitalized patient safety and fall prevention program with a voluntary patient fall prevention education program and other pertinent components. Thus, in March, April, and July of 2015 fall rates were higher by 1.825, 1.972, and 1.642 falls PTOPB, respectively. The highest fall rates in 2015 were recorded for January and June, and these were 469.11% and 224.03% higher than January and June 2014, respectively. Except for January 2014, all fall rates were generally higher than the median fall rate for the 6-year period. Fall rates varied considerably in 2014 and 2015, but the

2015 fall rates were more variable in terms of standard deviation (SD). The SD reflects how the monthly fall rate varied among each other (1.991 vs. 2.213 falls PTPOBD).

In terms of the variance, 2015 fall rates were also more dispersed in 2015, where the variance showed how the monthly fall rates were different from the mean (3.963 vs. 4.896 falls PTOPBD). Fall rates were highest in 2015, recorded in June at 11.290 falls PTOPBD, and which occurred when facility occupancy was only 83%. The typical rate of occupancy of the facility was 90%. Thus, I believe that recording the highest fall rate on the month with a low occupancy rate compared to the typical occupancy rates was a very unfortunate occurrence. I also considered the preceding as one of the major lessons learned in 2015. This unfortunate experience taught me and the rest of the nurses and healthcare providers in the project site that although facility occupancy was below average, healthcare staff need to be more vigilant especially among high fall-risk patients. Three repeat falls were recorded for June, 2015 (or a total of 6), which revealed much needed improvement in fall prevention knowledge for both patients and staff. Accordingly, measures to guard against repeat falls were reinforced during staff education and training sessions.

Officially, the revitalized patient safety and fall prevention program begun in 2016 after a two-month dry run in 2015. Figure 3 presents the monthly run chart for the 2016 data compared with the 2014 baseline data.

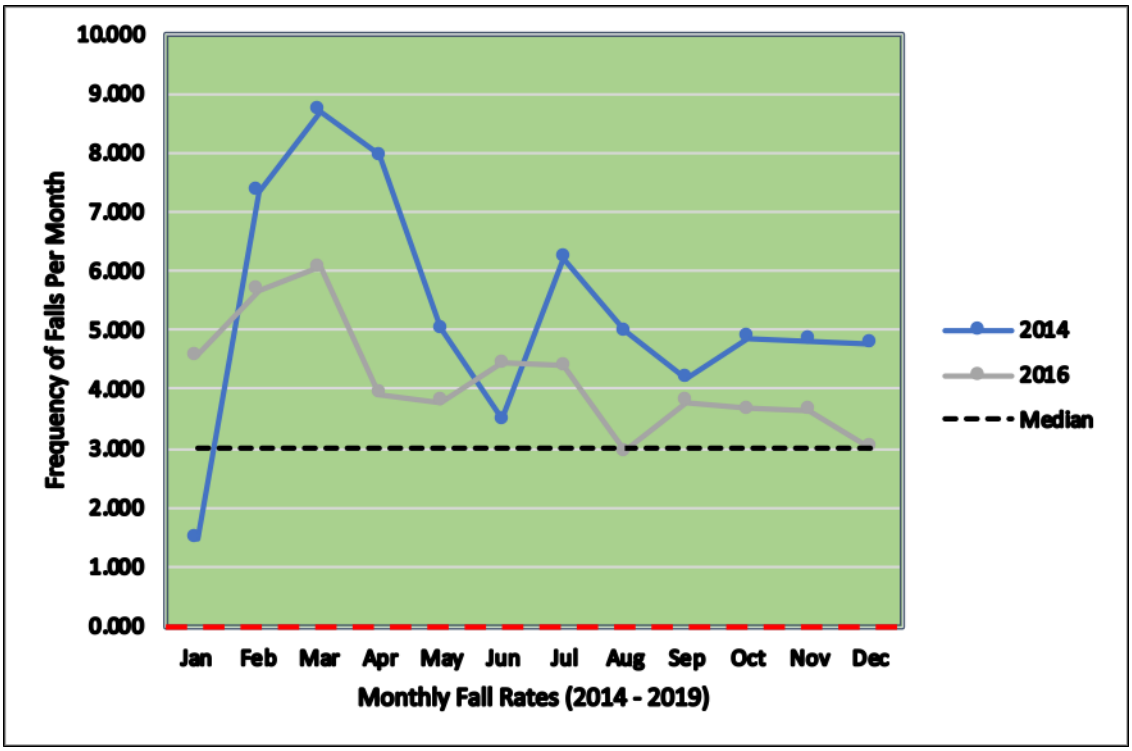

Figure 3. Run chart of fall rates per thousand occupied bed days for each month for 2014 and 2016

My visual inspection of the run chart in Figure 3 revealed that except for January and June 2016, all the other fall rates for 2016 were lower than the fall rates in 2014. January and June 2016 fall rates differed by 3.088 and .944 PTOBD, respectively or 206.87% and 27.08%, respectively from baseline data. The fall rates for the rest of the months in 2016 were lower by a range of 0.408 to 4.043 PTOBD, or a difference of 9.75% (September) and 50.76% (April) lower from 2014 fall rates, respectively.

In terms of scatter or dispersion of monthly fall rate data between 2014 and 2016, 2016 fall rates were less variable than 2014, based on the SD (0.948 vs. 1.991 fall PTOPBD), variance (0.900 vs. 3.963 falls PTOPBD) and the range (3.110 vs. 7.203 falls PTOPBD). However, in 2014, the January fall rate was lowest for the year, whereas in

2016, the January fall rate was the highest (1.493 vs 6.061 falls PTOPBD). However, even if the fall rates for 2016 were lower than the baseline fall rates, the 2016 monthly rates were still above the median, and way above the ideal zero fall rate (red dashed line). Thus, for 2016, it can be concluded that although fall rates were generally lower than 2014, there is still much room for improvement.

In Figure 4, I compared the monthly run chart for the 2017 data with the 2014 baseline data.

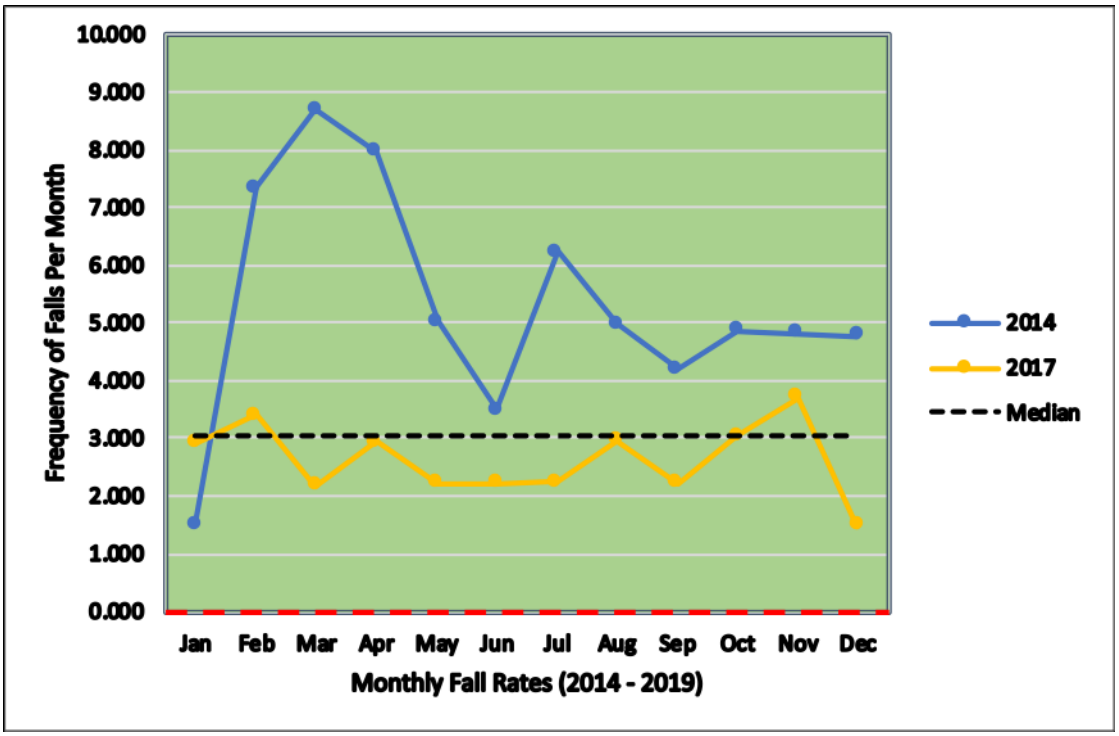

Figure 4. Run chart of fall rates per thousand occupied bed days for each month for 2014 and 2017

My cursory inspection of the run chart in Figure 4 revealed that except for January 2017, all the other fall rates for 2017 were lower than the fall rates in 2014. Jan 2017 fall rates were higher by 1.427 falls PTOPBD or 306.87% from baseline data.

However, for the other 11 months, I observed that fall rates in 2017 were lower than 2014 (baseline). The fall rates were lower by a range of 1.471 falls PTOPBD (December) to 3.704 falls PTOBD (November), or a difference of 2.233 falls PTOPBD. The December 2017 fall rates were lower by 62.94% from 2014, whereas November 2017 fall rates were lower by 75.60% from 2014. For the first time since the revitalized patient safety and fall prevention program was introduced in 2016, the fall rates for 2017 were below the median fall rate of 3.025 falls PTOBD, except for February and November. By 2017, there is indication to deny that the voluntary patient falls prevention education program, indeed, helped reduced fall rates.

It also observed that the fall rates in 2017 varied less with each other, compared to 2014: from 1.991 to 0.948 falls PTOPBD in 2016 and 0.633 falls PTOPBD in 2017. Furthermore, when I compared the variances, 2017 (0.633 fall PTOPBD) with 2014 (3.963 falls PTOPBD) and 2016 (0.900 falls PTOPBD), the year 2017 showed less variation with respect to the mean. In other words, variance in 2014, which was close to 4 falls PTOBD with respect to the mean for the year, were lower in 2016 at slightly less than 1 fall PTOBD, and in 2017 at about half a fall PTOBD. I generalized that when the recorded fall rates each month are lower and less variable, the staff is geared up and committed to their goal of reducing fall rates, and patient safety as well, from injury. Nevertheless, 2017 fall rates were still far from zero. Thus, although clinical evidence showed significant differences in terms of reduction in the fall rate data, there is still room for improvement.

In Figure 5, I compared the monthly run chart for the 2018 with the 2014 baseline data.

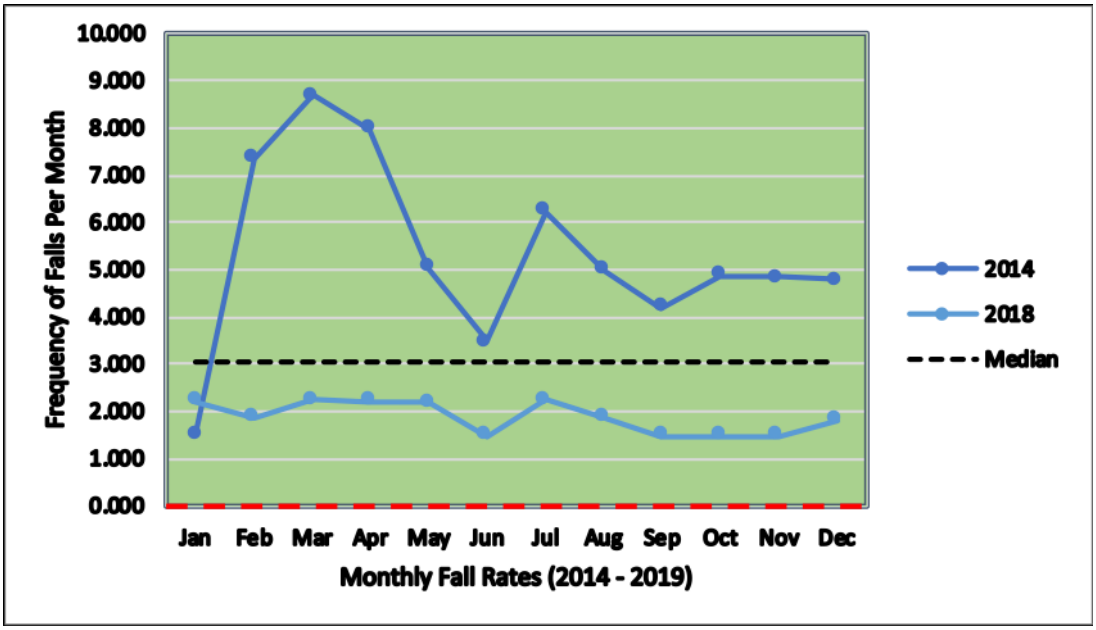

Figure 5. Run chart of fall rates per thousand occupied bed days for each month for 2014 and 2018

My ocular analysis of the run chart in Figure 5 showed that although the January 2018 fall rate was still higher than the January 2014 (i.e., 2.214 vs. 1.493 falls PTOBD), all the other fall rates in 2018 were lower than the fall rates in 2014. Jan 2017 fall rates were higher by 0.721 or 148.34% from baseline data. However, for the other 11 months, fall rates in 2018 were lower than 2014 (baseline). The 2018 fall rates were lower by a range of 1.476 (September) to 2.239 falls PTOBD (March), or a difference of 0.763 fall PTOBD. This range or difference between the highest and lowest fall rate recorded for 2018 was 322.57% lower than the 2014 baseline. September 2018 fall rates were lower by 35.30% from 2014, whereas March 2018 fall rates were lower by 25.75% from 2014. It may also be observed that the monthly fall rates in 2018 varied less with each other,

compared with 2014: from 1.991 to 0.633 fall(s) PTOBD in 2017 and 0.332 fall PTOBD in 2018. Additionally, compared with 2014 (3.963 falls PTOBD), 2016 (0.900 fall PTOBD), and 2017 (0.400 fall PTOBD) fall rates varied less with respect to the mean. In other words, variance in 2014, were lower in 2018 at about one-tenth of a fall PTOBD (i.e., 0.110).

I noted that all monthly fall rates in 2018 were below the median (black dashed line). This was a significant observation, which was also a milestone in the evaluation process of the facility's improvement in reducing fall rates. The median in Figure 5 represented by the black dashed line was computed for all the fall rates recorded from 2014–2019. It is symbolic because, the median is the first barrier that must be hurdled toward significantly reduced fall rates, zero falls, if possible. Thus, I concluded that the 2018 was a positive indicator that yearly fall rates were consistently improving from the baseline since the inception of the voluntary patient fall prevention education program component of the facility's revitalized patient safety and falls prevention program.

I also need to highlight at this point that the mean annual fall rates with which the variance is compared with, consistently decreased since 2014, except during the transition year (2015). The mean annual fall rates from 2014–2018, *except 2015*, were 5.323, 4.157, 2.624, and 1.877 falls PTOPBD, respectively. Additionally, I also observed that such consistent reduction in annual fall rates were posted with consistent small increments in occupancy at 87.694%, 88.917% (2015), 90.111%, 90.306%, and 90.278%.

I also observed that compared to 2014 baseline data, fall rates since 2016, the year that the voluntary patient falls prevention education program was introduced, the mean

annual fall rates were consistently lower ever since. I was once a member of the facility's fall prevention committee, and it was very clear that baseline rates were considered from 2014 and not 2015 for two reasons: first, the committee and the facility management wanted to use conservative and more realistic techniques and projections; and second, the operational healthcare team of the facility in 2015 was only 80%–85% of its typical personnel caring for the patients.

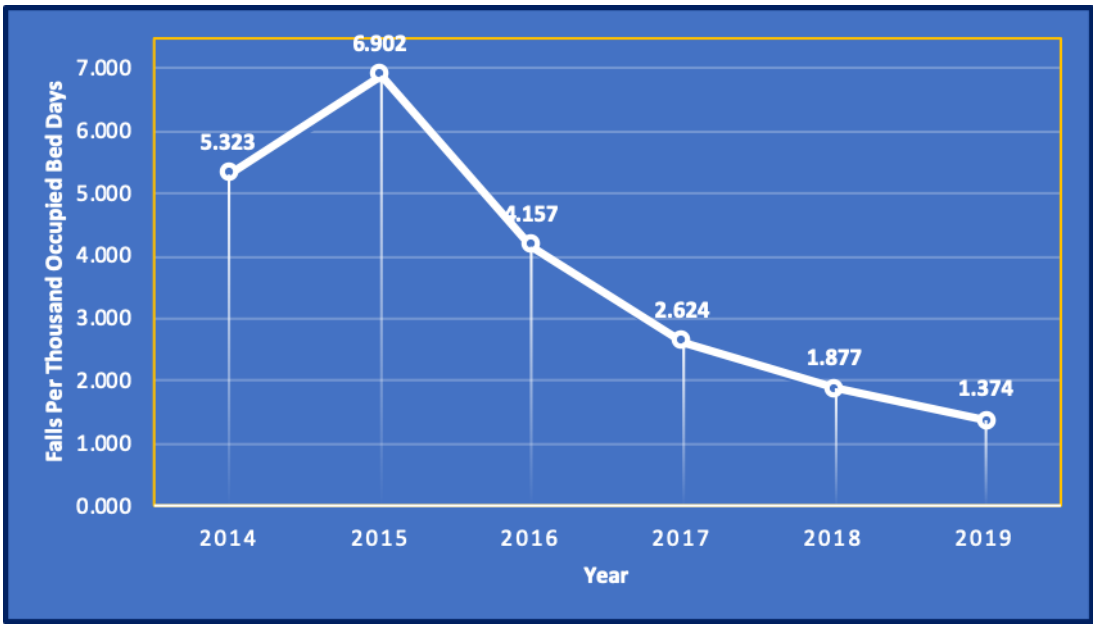

Figure 6. Mean annual fall rates from 2014–2019

Later in this section, I will project Figure 6 values using the trendline to have a rough estimate about when the zero-falls goal will be achieved assuming comparable efforts by the facility personnel and cooperation by clients who opted into the voluntary patient falls prevention education program.

In Figure 7, I compared the monthly run chart for the 2019 data with the 2014 baseline data. My visual analysis of the run chart in Figure 7 with cross-checking of the

numerical data for 2019 revealed that the January 2014 low fall rate of 1.493 falls PTOPBD, which was not improved from 2015-2018, was slightly reduced in January 2018 to 1.455 falls PTOBD. Thus, the highly motivating reductions in fall rates in 2018 for the facility's entire healthcare team were further reduced in 2019.

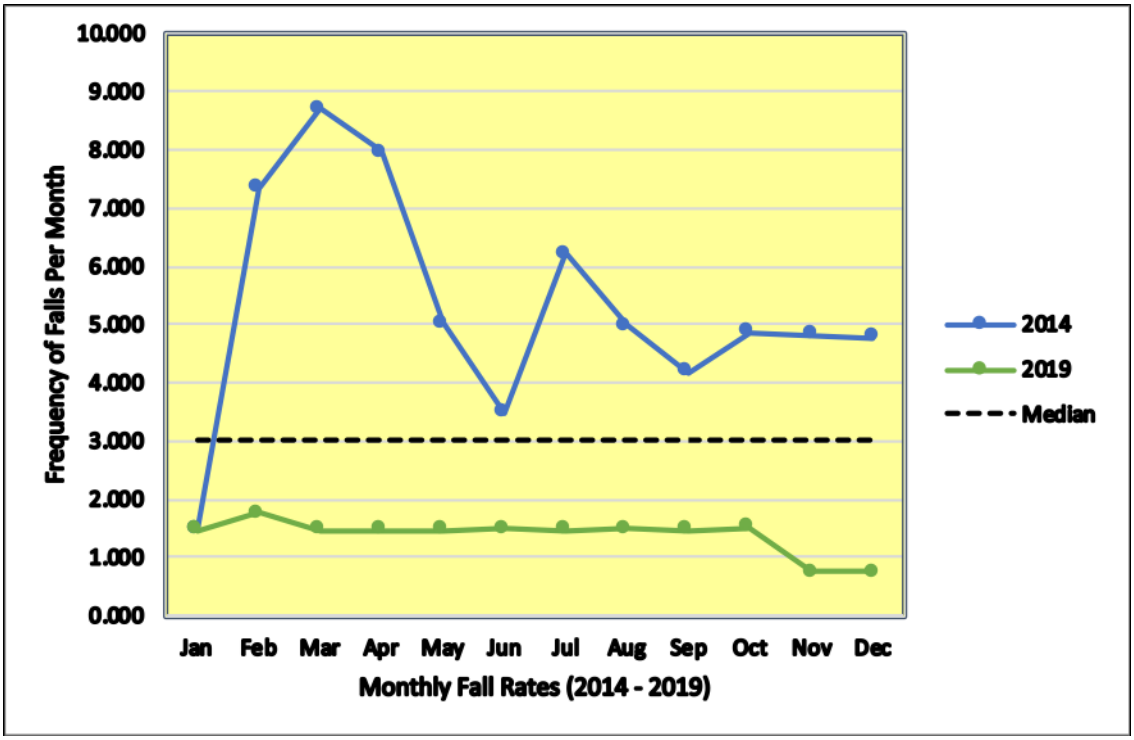

Figure 7. Run chart of fall rates per thousand occupied bed days for each month for 2014 and 2019

I calculated the 2019 fall rates to be lower than the baseline by a range of 0.749 fall PTOPBD (November) to 1.761 falls PTOPBD (February), or a difference of 1.011 falls PTOPBD. This range recorded for 2019 was 612.122% lower than the 2014 baseline. November 2019 fall rates were lower by 84.48% from 2014, whereas February 2019 fall rates were lower by 76.06% from 2014. I also noted from Figure 7 that the monthly fall rates in 2019 varied less with respect to each other, compared with 2014 and

2018: from 1.991 to 0.332 fall(s) PTOPBD in 2014 and 2018, respectively, to 0.303 fall PTOPBD in 2019. Additionally, compared with 2014 (3.963), 2016 (0.900), 2017 (0.400), and 2018 (0.110), fall rates varied less in 2019 with respect to the mean. In other words, compared with the variance in 2014, variance in 2019 was lower at about nine-hundredth of a fall PTOBD (i.e., 0.092), which differed by 3.871 falls PTOPBD or by 79%. I also calculated a very promising milestone in 2019 were very low recorded fall rates in two consecutive of about three-fourths of a fall PTOBD (i.e., less than 1 fall PTOBD): 0.740 PTOBD in November and 0.752 PTOBD in December. If this trend continues, I expect fall rates to come close to zero or actually hit the zero mark in the very near future.

Therefore, as to the first practice-focused question, based on the run charts in Figures 1, 2, 3, 4, 5, and 7, and the line chart in Figure 6, I can generalize and conclude that the voluntary patient fall prevention education component of the facility's revitalized patient safety and fall prevention program helped reduced falls. The second practice-focused question I posed addressed the question of sustainability for the voluntary patient falls prevention education program.

Practice-Focused Question 2

My second practice-focused question evaluated whether or not the facility's voluntary fall prevention program is sustainable. As I discussed in the methodology and briefly reiterated in this subsection, I assessed the sustainability of the voluntary patient fall prevention program using three factors adapted from the Buffoli et al. (2013) system.

I then slightly modified the Buffoli et al. (2013) system according to the purpose of this project:

Clinical performance. The first factor is quantitative, and examines the occurrence of falls and the injuries sustained, if any. The American Nurses Association (ANA) – National Database of Nursing Quality Indicators (NDNQI) evaluates the extent of injuries sustained from falls using a five-point scale based on the fall-related injuries classified as follows: (1) No sustained injuries secondary to the fall; (2) Minor injury/ies, which require simple interventions; (3) Moderate injury/ies, which require splint or sutures; (4) Major injury/ies, which require casting, further examination as in the case of a suspected neurological injury, and/or surgery; and (5) Death which resulted from fall-sustained injuries (as cited in Currie, 2008). Meanwhile, my project site records the aforementioned injuries sustained from falls using 1, 2, 3, and 4 for the first four classifications from ANA-NDNQI. However, nurses and other healthcare providers use 8 to indicate death due to injury-sustained fall. Additionally, they score a repeat fall with 6. Thus, for each fall that occurred, the extent of injury is scored 1, 2, 3, or 4. If the fall incident is a repeat fall, 6 is added to the injury score. If death results secondary to the fall, the incident is scored 8, not 5.

Resource sustainability. The second factor is resource sustainability in terms of education and training of the facility's healthcare personnel, a qualitative factor. The patient safety and fall prevention committee created a team, called ECHO which stands for Education Campaign for Health Objectives. The patient safety committee designated the main goal of ECHO as: to ensure that new facility healthcare personnel are well-

oriented about the patient safety and fall prevention program currently in place. Additionally, the patient safety committee also designated a twin goal for ECHO as: to ensure that new hires are assisted in the first month of their work until they are familiar with the patient safety and fall prevention strategies that the employees who were with the facility in 2015 were educated and trained for. The management and the committee are both aware that launching the same level of preparation for each batch of new employees that come in would be very costly and resource-intensive.

ECHO was created to ensure that for every new healthcare personnel that joins the facility, at least one nursing supervisor can be assigned to orient the new hire about the patient safety and fall prevention program and its new strategies. Furthermore, ECHO is responsible for the assignment of two nurses to each new hire to coordinate similar to a buddy system assistance team-up, where each nurse assists the new hire four hours each shift for one month until the new hire is familiar with the facility operations and its patient safety and fall prevention strategy. I evaluated manpower resource sustainability qualitatively and quantitatively using the facility's retention statistics.

Social sustainability. The third factor is social sustainability, also a qualitative factor. I assessed social sustainability in conjunction with the social ecological model (SEM). I adopted SEM as the conceptual framework of this project. Accordingly, in the latter part of Section 4, I elucidated the implications of the findings from the first practice-focused question and the extent of injuries sustained from the falls in this subsection in terms of the overlapping influences among the five levels of factors in the SEM model that put patients at risk or protect them from falls. Additionally, I discussed

social sustainability in terms of the implications of the findings to social change, as advocated by Walden University (2017a) for DNP projects.

Injuries sustained from falls. The patient safety and fall prevention committee maintains weekly fall incidents recorded in the patient's records, summarized in de-identified weekly fall reports, submitted by nurse supervisor. The nurse supervisors take turns in the preparation and double-checking of the weekly fall summary reports. The patient safety and fall prevention committee also modified the ANA-NDNQI scale classifying the injuries in terms of the scores using a score of 8 instead of 5 for deaths occurring as a result of falls, as well as the score of 6 for repeat falls. The facility numerical scoring process earlier discussed under clinical performance as a factor considered in the sustainability of the patient education component of the falls prevention program, when injuries 1 to 4, and 8 were sustained as a result of a repeat fall, 6 is added. Table 2 presents the scoring system of the injuries sustained by patients from falls each month while confined in the facility developed by the patient safety and falls prevention committee.

Table 2.

Scoring System of Injuries Sustained from Falls Occurring in the Facility per Month

Statistical Limits	**Qualitative Descriptor of Injury Sustained**	**Short form of Descriptor**
26 and above	Extremely Severe	ES
15 to 25	Severe	SE
9 to 14	Moderate	MO
4 to 8	Minor	MI
3 and below	None or Practically Negligible	NO

I now present Table 3 summarizing the monthly fall-related injuries sustained in the facility per month in numerical format using the scoring system shown in Table 2.

Table 3.

Fall-Related Injuries Sustained While Confined in the Facility (2014–2019)

Month	Years					
	2014	**2015**	**2016**	**2017**	**2018**	**2019**
Jan	35	44	9	6	4	2
Feb	19	35	12	5	2	2
Mar	19	29	12	4	4	3
Apr	27	29	9	6	4	2
May	10	27	10	5	4	3
Jun	8	43	11	5	3	3
Jul	10	22	10	7	4	2
Aug	15	24	10	8	2	3
Sep	17	21	10	5	3	2
Oct	17	16	9	6	2	3
Nov	15	17	11	8	3	1
Dec	25	9	8	3	2	2
Annual Totals	217	316	121	68	37	28
Annual Average	**18.08**	**26.33**	**10.08**	**5.67**	**3.08**	**2.33**

One way of evaluating clinical performance with respect to patient safety and fall prevention is through injuries sustained while patients are under the care of the facility each month. By cursory inspection, and based on the facility classification system, I observed that fall-sustained injuries were generally severe (M = 18.08) in 2014, extremely severe (M = 26.33) in 2015, moderate (M = 10.08) in 2016, minor (3.08) in 2017, and practically negligible (2.33) in 2019. Although I noted all-related injuries to have spiked during the transition year (i.e., 2015), fall-related injuries were reduced beginning 2016. Looking at the annual data, I also observed that injuries were further reduced in 2017 and 2018. Thus, in terms of clinical performance based on the injuries summarized yearly, I can conclude that the voluntary patient fall prevention education program component is sustainable.

Another way of looking at clinical performance as a factor in the sustainability of the voluntary patient falls prevention education program component is by analyzing the variation by way of run charts. Figure 8 shows a run chart summarizing the injuries sustained secondary to falls sustained by patients from 2014 to 2019. To obtain a better visual, I presented the run chart in Figure 8 as two charts, one with the data above the median (2014 and 2015) of all the monthly data for the six-year period, which posted substantial spikes (Figure 9), and one with the data above and below the median, as observed from 2016–2019 (Figure 10).

I used color-coding to easily distinguish between the time-ordered lines for each year. I computed the median for all 72-monthly data from 2014–2019 by arranging the injury scores from highest to lowest. The computation yielded a median at score 8. The

median score is represented in the run chart as the red dashed line. I further observed just by looking at the run chart that the extent of injuries sustained in 2014 and 2015 was highly variable and more severe, whereas the last two years on record, 2018 to 2019 showed less variability and were roughly minor or negligible.

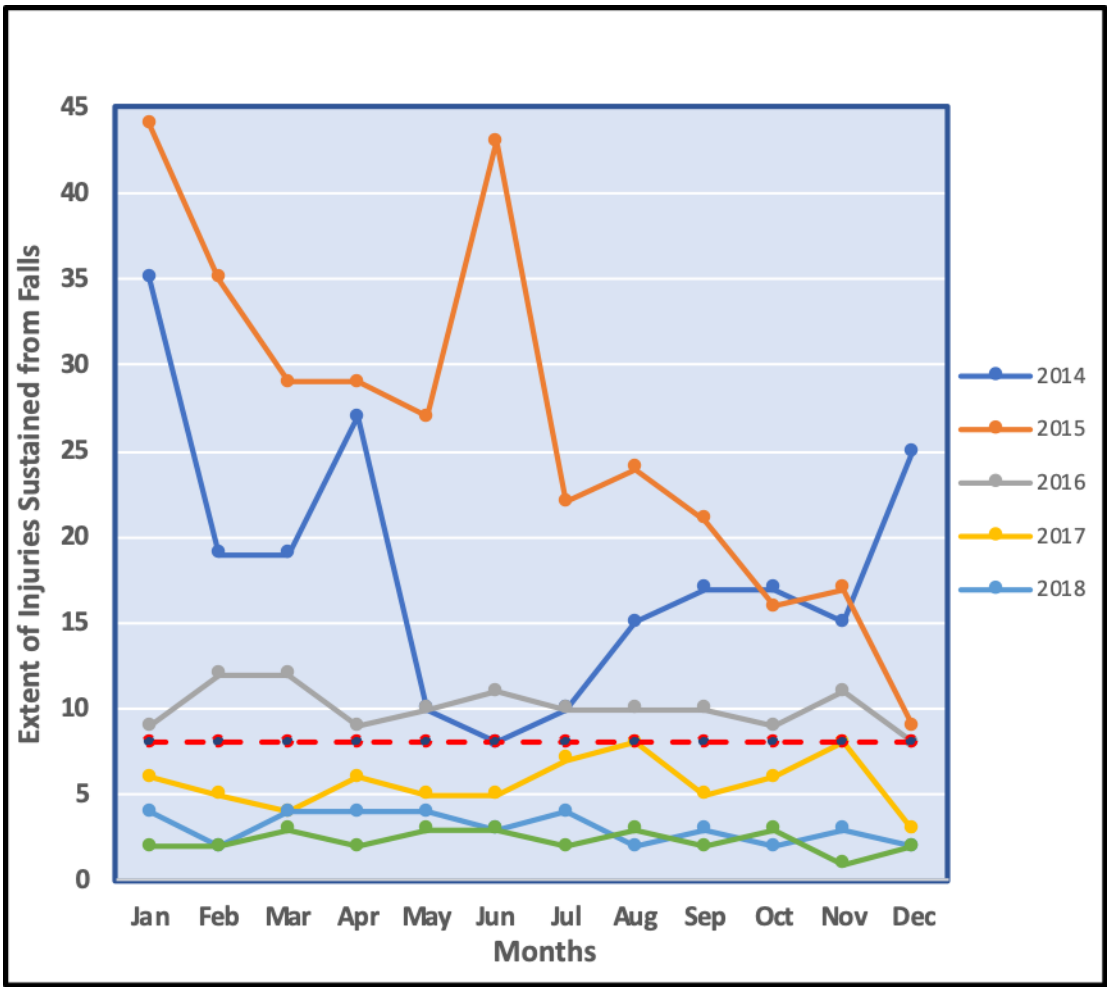

Figure 8. Fall-related injuries sustained while under facility care (2014–2019)

From Figure 8, I observed that the extent of injuries sustained due to falls in 2014 was variable in a random pattern. However, during the transition year (2015), as the facility health personnel learned more and trained in fall prevention strategies, and except

the substantial injury spike in June and small spikes in August and November, fall-related injuries tapered from a high of 44 (ES) to a low of 9 (MO). The variation I observed in the extent of injuries in 2014 from Figure 8 was rather erratic. Based on the scoring scheme devised in the facility, very high scores or those above 20 involved repeat falls and/or death secondary to a fall. To illustrate, from the summarized de-identified reports in January 2015, there were 3 repeat falls, and thus, the monthly score was the facility's all-time highest fall related injury of 44 (ES).

As I observed from Figure 9, January 2014 and February 2015 scores were identical, both 35 (ES), but February 2015 score spiked because of one repeat fall which resulted in the death of a patient and two severe injuries which required surgery. Meanwhile, in January 2014, there were two repeat-fall incidents, one of which resulted in death secondary to the fall. Thus, the quantitative fall-related injury developed in the facility to assess falls were quite effective for use in conjunction with run charts. In fact, without looking at the individual cases of de-identified data, a visual of the run chart in Figure 9 will readily deduce repeat falls and/or death secondary to falls.

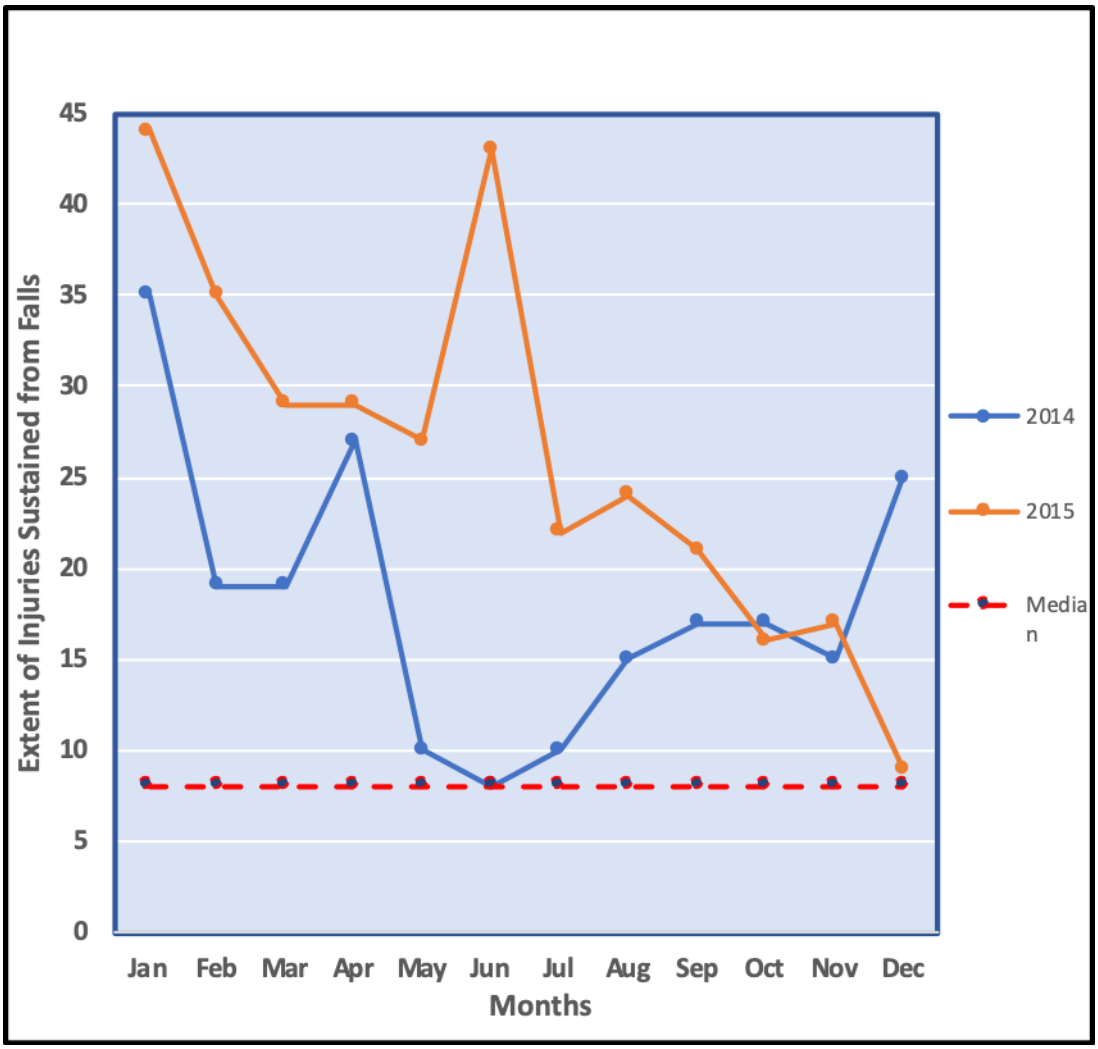

Figure 9. Fall-related injuries sustained while under facility care (2014 and 2015)

Figure 10 presents a run chart with the fall-related injuries sustained per month from 2016 to 2019. I readjusted the scale because the higher scores were not included. It was quite apparent that during the introductory year of the voluntary fall prevention education program (2016), the extent of the injuries sustained secondary to falls were lessened, but the time-ordered trends were still erratic. In the following year, the extent of the injuries sustained from falls continued to lessen because all injuries recorded were now below the median score of 8. This is one indication that the clinical performance of the program being evaluated is improving.

The fall-related injury data for 2017 showed lower scores, which may be associated with lower severity of injuries – the lowest score was 3 (NO) or practically negligible injuries and the highest score posted was 8 (MI) or generally minor injuries. Compared with 2016 data, the clinical performance of the education program appears to be consistently improving and the reductions reported in 2016 were sustained. The 2018 data was even more motivating because of lower injury scores or a range from 2 (NO) to 4 (MI), qualitatively described as a range of fall-related injuries from practically negligible to minor. Finally, the extent of fall injuries was further reduced in 2019 with scores ranging from 1 to 3, which suggests falls with practically negligible injuries.

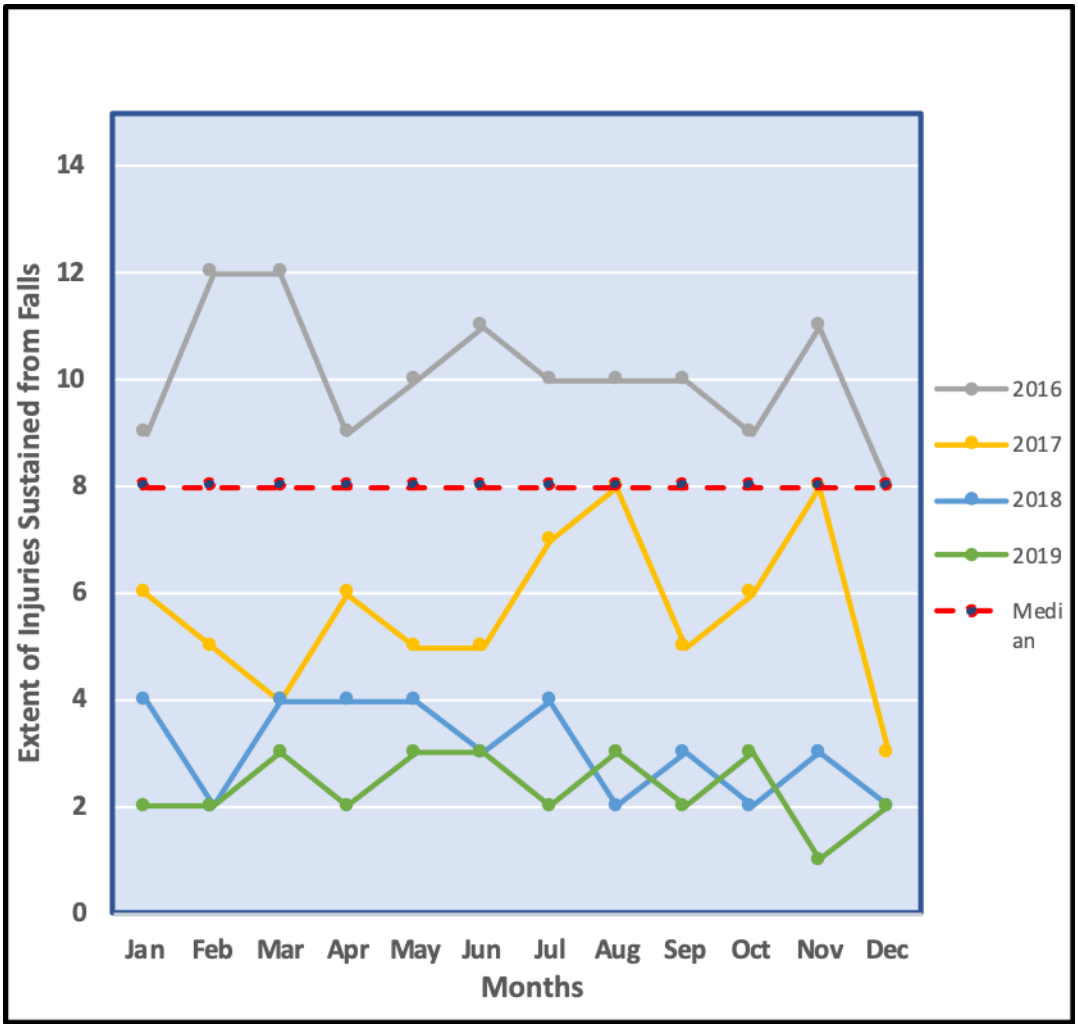

Figure 10. Fall-related injuries sustained while under facility care (2016–2019)

Also, from Figure 10, the 2019 data was most promising because the goal of a fall prevention program for any healthcare facility is to mitigate the extent of the injuries sustained from falls. Healthy People 2020 also works toward this objective (Office of Disease Prevention and Health Promotion, 2019). Therefore, in terms of clinical performance on account of fall rates and the injuries sustained secondary to falls, the program is sustainable.

Meanwhile, on account of resource sustainability, education and training of incoming or new hires can be handled through the ECHO team. While expenditures for a year-long preparation may be too expensive to conduct even every five years, the ECHO team created by the patient safety and prevention committee will ensure that every new hire reports for his or her facility duty apprised of the patient safety and fall prevention program and its various components, including the voluntary patient falls prevention education program. The facility executives, the patient safety and fall prevention committee, and I are hopeful that the ECHO team will be able to sustain the knowledge and training needs of new hires because the overall retention rate of the facility is 94%. Hence, the voluntary patient fall prevention education program is practically ensured of resource sustainability, given the same effort or better effort of the facility healthcare personnel, and similar profile of patients, their vulnerabilities, and receptiveness of the voluntary patient falls prevention and education program. Social sustainability is discussed under *Implications*.

Implications. The previous patient safety and fall prevention program was adopted in 2009 and used until 2014. As of middle of 2014, the management and the committee on patient safety and fall prevention resolved to minimize fall rates by including an educational component, both for the healthcare staff as a condition for continued employment, and the patients and/or their families on a voluntary basis. All preparations including education and training of facility personnel, and a two-month dry run, orientation, briefings, and other meetings took place in 2016. The new patient safety and fall prevention program was called the revitalized patient safety and fall prevention

program. Right on its first year of introduction (i.e., 2016), the patient education component is believed to be instrumental in the reduction of fall rates. The reduced fall rates were consistent from 2016 to 2019. Thus, the findings implied that the capacity-building efforts to enhance the facility healthcare personnel's skill in fall prevention and the voluntary patient fall prevention education helped in the reduction of facility fall rates. The main difference between the old program and the revitalized program is the educational component and the renewed effort of everyone in the facility. Therefore, it may be concluded that the voluntary patient falls prevention education program helped reduce the fall rates.

However, reduced fall rates cannot be completely relied upon as an indicator of sustainability. Thus, in this project, clinical performance, resource sustainability, and social sustainability were also evaluated. As to clinical performance, the voluntary patient falls prevention education program also helped in easing up the extent or severity of the injuries sustained. To date, the educational component helped not just in reducing the fall rates but also the severity of the injuries sustained.

I quantitatively projected the trend of the mean annual fall rates and the mean annual fall-related injuries sustained since 2014, in terms of severity, and presented these in Figures 11 and 12. My projections offered further support for the theoretical sustainability of the education program.

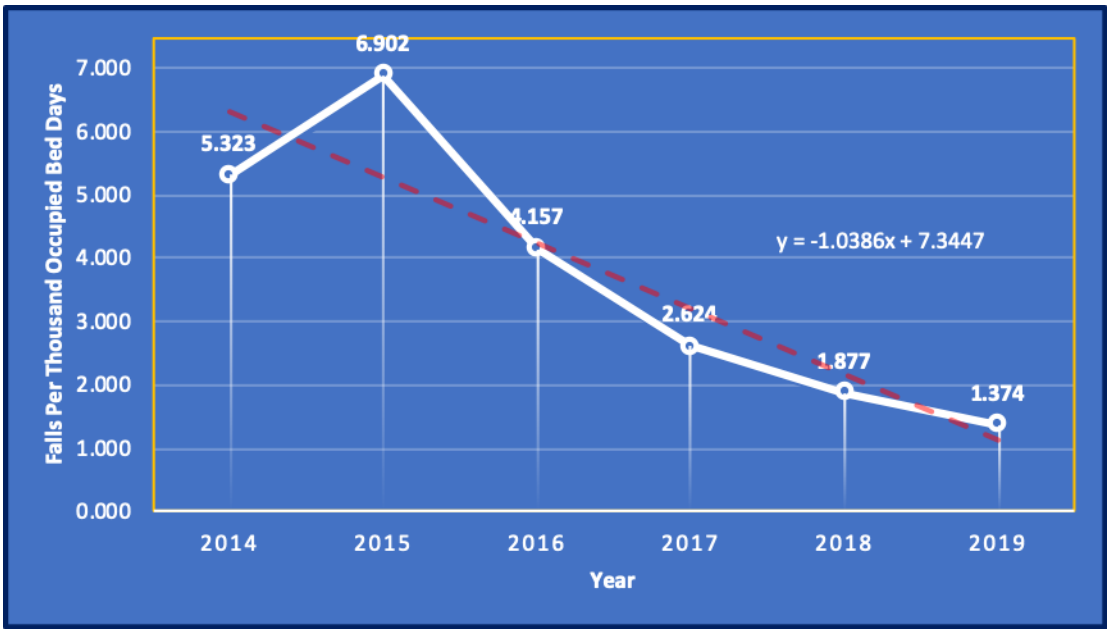

Figure 11. Mean annual fall rates from 2014-2019 with the trend line and the trend equation

As the trend line equation of the fall rates in Figure 11 indicates, y = -1.0386*x* + 7.3447, the fall rates are consistently decreasing. Using this equation, the fall rates in terms of falls per thousand occupied bed days should be lower in 2020. The trendline was computed with the years represented as follows: 2014 (1), 2015 (2), 2016 (3), 2017 (4), 2018 (5) and 2019 (6). Substituting the trend equation with $x = 7$ for 2020, $y = 0.745$ fall PTOBD.

Alternatively, I used interpolation and the actual values of the fall rates per year, and set up two of the possible equations:

$$\frac{x - 1.37}{x - 1.88} = \frac{2020 - 2019}{2020 - 2018}$$

$$\frac{x - 1.37}{x - 1.88} = \frac{1}{2}$$

$$2x - 2\,(1.37) = x - 1.88$$

$$2x - 2.75 = x - 1.88$$

$$2x - x = 2.75 - 1.88$$

$$x = 0.87$$

Thus, whether the trend equation or interpolation is used, lower fall rates are theoretically sustainable in 2020 given similar conditions that made way for the reduced fall rates from 2016 to 2019. Provided similar conditions prevail, lower fall rates will be sustainable beyond 2020, zero falls being the main goal.

Meanwhile, as the trend line equation of the extent or severity of fall-related injuries in Figure 12 shows, $y = -4.3869x + 26.219$, the severity of the fall-related injuries is consistently decreasing. Using this equation, the severity of fall-related injuries should be reduced in 2020. However, substituting $x = 7$ for 2020, $y = 4.36$, which is an increase in fall severity from practically negligible to minor injuries. This implies that the trend may not actually describe the pattern of the extent of fall-related injuries because the first two inputs (2014 and 2015) were recorded with the old program still in place.

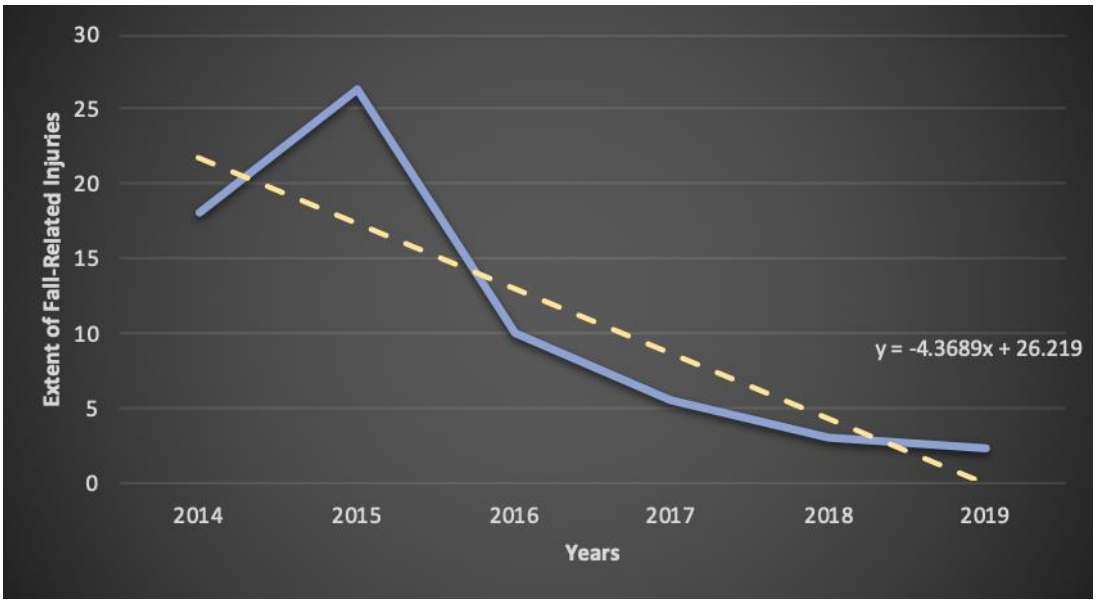

Figure 12. Mean annual extent of fall-related injuries from 2014–2019 with the trend line and trend equation

Alternatively, I also used interpolation and the actual values of the extent of severity of fall related injuries per year and set up two of the possible equations from the years when the voluntary patient fall prevention education program is already in effect:

$$\frac{x - 2.33}{x - 3.08} = \frac{2020 - 2019}{2020 - 2018}$$

$$\frac{x - 1.37}{x - 3.08} = \frac{1}{2}$$

$$2x - 2\,(1.37) = x - 3.08$$

$$2x - 2.74 = x - 1.88$$

$$2x - x = 2.74 - 3.08$$

$$x = -\,0.34 \approx 0$$

For the extent of severity of fall-related injuries, when I used interpolation, lower extent of severity from fall-related injuries are theoretically sustainable in 2020 given

similar conditions that made way for the reduced severity of fall-related injuries from 2016–2019. The foregoing interpolation revealed that if similar conditions prevail, lower fall rates will be sustainable beyond 2020, zero falls being the main goal and aware that negative value for the variable is not possible.

In terms of resource sustainability, and based on my reflective analysis of the conditions, at this point, I believe that consistently good clinical performance on reduced fall rates and extent of severity does not rest solely on the ECHO team and the facility's high retention rate. The ECHO team can only do so much in terms of continuous capacity building. However, the facility's healthcare team also need to offer their renewed commitment to exert their dedicated efforts so that the gains from the first four years of the revitalized program can be sustained in the coming years. In this respect, management needs to continually reinforce employee engagement and commitment in order to strengthen their morale and their resolve to engage in quality healthcare delivery while looking after the safety and well-being of the patents.

Additionally, it is also of utmost importance to keep the patients engaged, too, for their safety. In this respect, it is important that the facility considers the key findings of Dempsey and Reilly (2016) regarding the drivers of nursing engagement. Dempsey and Reilly (2016) highlighted career development opportunities and ethical conduct of business as paramount to engage employees to commit their full support for organizational goals. It is also essential that patients are engaged and that patient's commitment for their safety are boosted through effective strategies As Walters and Duthie (2017) underscored, "safety is a shared responsibility" (p. 712).

The implications of the findings to the social sustainability of the voluntary patient falls prevention education program is grounded on the conceptual framework of this project, the social ecological model. Under the individual level, the sustainability of the patient education program appears promising if the receptiveness of the patients to the program in 2020 and in the succeeding years will at least be comparable to 2016–2019. It was evident that long-time patients in the rehabilitative department have exhibited positive behavioral change as a result of the education program. It is, therefore, important for the healthcare staff, including those in charge of the patient education to instill among the patients the importance of voluntarily opting into the program for its continued sustainability.

Towards this end, it should make a difference if the facility management executives and the patient safety and fall prevention committee members will endeavor to introduce a patient support group and a support group for the healthcare team, outside of ECHO. It is also important that the nurse case supervisors or designated personnel regularly assess the results of patient surveys conducted to evaluate and monitor the patient education component of the fall prevention program. The patient safety and falls prevention committee can only adjust the program strategies based on the results and analysis of the surveys and the feedback from the nurse case managers, who are typically designated to conduct patient education.

In terms of the interpersonal level, social sustainability of the patient falls prevention education program in the patient support group should involve family members. Thomas, Liu, and Umberson (2017) argued that family members can offer a

more profound sense of meaning and purpose, as well as, social support to help promote patient well-being. Additionally, nurse case managers who deliver the patient education modules to the patients who opted into the program should know more than the patient's medical history, but also the patient's personal details. This way the patient will be comfortable to share more and develop better rapport with the nurse educator. In which case, facility personnel designated to conduct patient falls prevention education should be continuously trained for effective and productive interaction with patients.

Meanwhile, the institutional and community social sustainability of the voluntary patient falls prevention education program, will also be hinged on sustained linkages with relevant institutions, informational networks, and organizations. Particularly, the Agency for Healthcare Research Quality (AHRQ) played an important role in the provision of education, training, and tools for the facility personnel in preparation for the revitalized patient safety and falls prevention program. In addition to the state's Department of Health (DOH) and the CDC, linkages with the Joint Commission Center for Transforming Healthcare, the American Nurses Association, and the National Quality Forum (NQF) should be maintained and established. The facility needs to maintain linkages with the NQF so that the facility can migrate from its modified form of the ANA-NDQNI to the injury falls per 1000 patient days measure of the NQF (2011). It is also an important social sustainability move of the facility to cooperate and coordinate with community leaders and businesses to support the facility's patient safety and fall prevention program either financially and/or structurally via a safe community for high fall-risk individuals.

Finally, in terms of the policy or enabling environment, the most crucial issue regarding fall prevention is the administration of psychoactive or psychotropic medications to older adult patients or those 65 years and older. Although the facility is quite conservative with respect to the use of psychoactive medications, most of the new older adult patients have psychoactive medications in their medical history. Unfortunately, it is these patients who figured into the facility fall statistics. In this regard, it will also be crucial for the social sustainability of the facility's patient fall prevention program if it can contribute to influence policy to withdraw the use of psychoactive medications among the geriatric population because psychoactives increase the fall risk of elderly patients. Milos et al. (2014) offered a good discussion about the need to withdraw the use of psychoactive medications among the geriatric population.

Recommendations

The voluntary patient falls prevention education program helped reduced fall rates in the facility from a high of 11.29 falls per thousand occupied bed days to 0.752 falls per thousand occupied bed days. It was also evident from the data that the severity of fall-related injuries was significantly reduced from very severe to almost negligible four years into the program. Theoretically, it appeared that lower fall rates and reduced severity of fall-related injuries secondary to falls are sustainable. Therefore, in the light of the findings from the project and the implications discussed, I advance the following recommendations to ensure that the gains from the program are sustained in the succeeding years: (1) Strengthen employee engagement and commitment to the delivery of quality healthcare and patient safety through personal and professional development

programs; (2) Expose the nurse supervisors, department heads, and healthcare personnel delivering the patient education modules to Communication for Development, which was described in CDC (2019) as an evidence-based, planned, and systematic approach in the promotion of measurable behavior, as well as social change. This approach will be beneficial in all the five hierarchical levels of the sociological ecological model; (3) Constitute support group for patients voluntarily enrolled in the falls prevention education program to offer both informational and social support. It is important that the support group includes family members; (4) Constitute support groups for the nurse-educators that can provide both informational and social support for the usually very tired and busy health personnel; (5) Designate at least a day or two of orientation for each patient-educator (nurse case manager) team so that the patient can be more comfortable with the educator, and for the educator to know relevant personal details of the patients that can help establish rapport with each other; (6) Extend linkages of the facility beyond the DOH and the CDC to the NQF and the Joint Commission Center for Transforming Healthcare, the American Nurses Association and other organizations advocating fall prevention in healthcare; (7) Maintain linkage with the AHRQ for support in additional and updated training for patient safety and falls education. Dissemination of new knowledge may be shared with other facility personnel through small group echo seminars; (8) Adopt the injury falls per 1000 patient days measure of the NQF for severity of fall-related injuries in consideration of the problems with the facility-devised, but ANA-NDQNI-based scoring system, especially when the severity of falls are low. The only foreseen issues with the NQF measure would be that it does not reflect death

secondary to falls and repeat falls. However, the committee will have to decide on this recommendation; (9) Maintain harmonious relationship with businesses, community leaders, and village associations in the community for support in terms of financial, structural, or policy-change; (10) Contribute to influence policy regarding reassessment of the current standards for administration of psychoactive or psychotropic medications among the elderly. Hospital records indicate that most of the falls, which resulted to moderate or severe injuries were new patients who came from another institution (a nursing home, usually), and are being administered psychoactive drugs in their medication history; and (11) Adopt the robust process improvement methodology, such as the Preventing Falls Targeted Solutions Tool, which integrates Lean Six Sigma for a more systematic and data-driven approach to fall prevention and change management as advocated by the Joint Commission Center for Advancing Healthcare (2020). The facility can engage the community to assist in procuring this more advanced tool.

Strengths and Weaknesses

Although run charts constitute a simple descriptive tool, it is the main strength of the project because with just one chart (Figure 1), the project was able to obtain a snap shot of the history of falls in the facility for a six-year period in a time-ordered fashion. The color-coded charts were able to show when the fall rates spiked or dived to a low. Hence, patterns or variations can be spotted with ease. Another strength of the project is its analysis, not just of the fall rates in falls per thousand occupied bed days, but of the extent of severity of fall-related injuries. By modifying the ANA-NDQNI system, the run

charts of the severity of fall-related patient injuries can easily associate spikes to death secondary to falls and/or repeat falls.

Although I did not use an experimental design for the project, the run charts offered the semblance of a longitudinal study, not just at several points in time, but throughout the year. Thus, variations and patterns are visible at one glance. I also examined and confirmed the sustainability of the voluntary patient falls prevention education delimited to clinical sustainability, resource sustainability, and social sustainability

However, given that a run chart is a descriptive tool, the project was unable to present quantitative evidence that the positive changes in terms of lower fall rates are significant. Neither were effect sizes computed, although these measures are not called for in a DNP project. The theoretical sustainability of the program was confirmed using the trend line equation of the mean annual fall rates, and also by using interpolation. This was not convincingly shown for the extent of severity of fall-related injuries, where the trend line equation yielded a minor injury scale for the projected 2020 fall, coming from practically negligible injuries in 2019. The interpolation of the fall-sustained injuries yielded a negative number, which was rounded off to zero (0). Although both instances may be possible, the result from the trend equation was not lower than the value for 2019. However, a zero-level fall-related injury on the facility-devised scale means that no falls were recorded for the whole year of projection (2020). With no falls, there will be 0 fall-related injury and while this is an ideal scenario, it may not be realistic for a facility that cares for rehabilitative and geriatric patients.

With the dramatic decrease in fall rates and severity of injuries from falls, I believe that statistical significance or effect sizes may not be really needed. What is important in this project is the clinical significance. Tenny and Abdelgawad (2019) explained that clinical significance indicates whether the difference or improvement observed is important to the patient and the clinician. Beginning 2016, when the voluntary patient falls prevention education program was introduced, no fall-related deaths have occurred in the hospital. This is a very important difference for the patients, and it is of utmost significance to the clinician who is committed to quality and safety in healthcare. Saving lives from a preventable accident is a step closer to the goal of a positive social change through safe healthcare delivery. Preventing falls and educating high-risk fall patients to share responsibility for his/her own safety facilitates such positive social change.

Section 5: Dissemination Plan

Introduction

Both researchers and implementers of QI initiatives emphasize the importance of dissemination strategies as an integral part of enhancing quality of care (Forman-Hoffman et al., 2017; Hirschhorn et al., 2018). However, there was an observed gap among researchers and clinicians in the translation of the findings of QI initiatives to practice (Forman-Hoffman et al., 2017). This gap, according to Hirschhorn et al. (2018) hinders the rate of translation of best practices from the results of the QI evaluation, which consequently delays action on preventable harm in healthcare. Forman-Hoffman et al. (2017), directed attention to the field of implementation and dissemination of QI assessment as rather new. They argued that the conceptual framework as well as terminology in relation to QI efforts have not yet been standardized. However, Hearld, Alexander, Wolf, and Shi (2019) stated that "standardized approaches to dissemination are likely the exception and not the rule" (p. 511). The dissemination plan for this project is a hybrid of the traditional approach and some strategies customized for the purpose of the project.

Dissemination Plan

In a limited sense, dissemination of research describes an active approach in communicating evidence from research into practice for a target population by way of purposeful selection of channels to deliver a set of strategies (McVay, Stamatakis, Jacobs, Tabak, & Brownson, 2016). In this project, the breadth of planned diffusion of the findings from the evaluation of the QI initiative entails a multisectoral process not just

within the project locale, but within a preidentified set of stakeholders among partner organizations and policy makers, following the work of Hearld, Alexander, Wolf, and Shi (2019). I will provide the project site with an extended summary of the results of the QI evaluation, as per arrangement with the facility management. Furthermore, as part of the arrangement, I will carry out a series of seminars or meetings that will tackle not just the findings of the evaluation, but also how the improvement can be sustained.

Audience. My target audience for the dissemination plan are various stakeholders within the project site, along with a number of point-persons of ideal partners for sustainability of the falls prevention education program quality improvement initiative.

Facility patients. I will send an electronic version of a pamphlet to past and present facility patients detailing the gains of the falls prevention education program. I will also include the following in this dissemination mechanism: (a) fall prevention guidelines to prevent future fall incidents; (b) fall prevention strategies which can be practiced at home, or in a non-healthcare environment and (c) a message of gratitude to patients who participated in the falls prevention education program. For those who did not opt into the voluntary patient education program, the message will be an invitation to engage them for their own safety and invite current patients to join the voluntary patient falls prevention education program. Additionally, my message to all past and present patients will exhort them to take the guidelines seriously for their own safety and to adopt applicable strategies outlined in the information from the pamphlet.

Project site nurses and other healthcare personnel. I will also send emails of the results of the falls prevention education program QI evaluation to disseminate important

insights from the findings to nurses and other healthcare personnel. I will send this communication to this group at least one week prior to a seminar-workshop to be carried out in batches to ensure that the site operations will not be disrupted.

My dissemination plan includes the seminar workshop for nurses and other healthcare-personnel. The protocol of the seminar-workshop will be similar to that of the pre-implementation trainings conducted for the falls prevention program, which included the educational component evaluated in this project. The workshop will also elicit suggestions and identify measures that will help sustain the improvements posted during the implementation of the falls prevention education program. Thus, inputs for sustainability of the educational component are to be drawn from the very people who understand the context, the best practices, and observed weaknesses or limitations of the QI initiative evaluated. The inputs from the workshop will then be enhanced and communicated with the management and the patient safety and falls prevention committee as measures for sustainability for the next stages of the falls prevention education program.

I will present relevant run charts of the fall incidents to the nurses and other healthcare personnel. I will also discuss specific components of the falls prevention education in relation to the run charts. My presentation will also disseminate insights from the project I believe to be responsible for the consistently reduced fall incidents during the implementation of the falls prevention education component for the patients.

Project site management, administrators, and the patient safety and falls prevention committee. I will provide the management and administration with the final

and approved documentation of this project. This was part of the agreement with the management and the facility administrators when I requested permission to use the facility as locale for the project. I will request a meeting to be scheduled with the project site management and administrators at their most convenient time so that I can present relevant run charts and the corresponding recommendations for sustainability of the falls prevention education program in the project site.

Presentation of the run charts to the specific stakeholders with the associated recommendations was one of the purposes of this project. To save time, I will present the run charts and the corresponding recommendations to the administrators, the management, and the patient safety and the falls prevention committee in one meeting. Presenting the run charts to the stakeholders together with the findings of the QI evaluation is part of the dissemination plan to ensure their continued support for the sustainability of the falls prevention education program.

Organization partners. Success and sustainability of a falls prevention education program are hinged on partnership with organizations whose mission is aligned with the significance of fall prevention (Schneider & Beattie, 2015). There are a number of foundations that support fall prevention efforts. For this project, the ideal organization partners are those based in Maryland or Washington, DC, on the basis of geographical proximity with the project site. As a dissemination strategy, I will send these organizations a pamphlet of the extended findings of the QI evaluation with the proposed measures to promote sustainability of the entire fall prevention program hinged on the educational component and projected future data based on the data during the

implementation of the falls prevention education program. Accordingly, I will also project the future sustainability of the voluntary patient falls prevention education components based on the guidelines formulated from the run chart simulation work of Anhøj and Olesen (2014). I am considering the Archstone Foundation (2020) and the Maryland Department of Aging (2016) as organization partners.

Community partners. Cognizant that old age brings about healthcare challenges among health professionals due to multiple comorbidities, the project site's fall prevention efforts can act as a conduit to draw health professionals together towards a community-wide interprofessional relationship. As suggested in the work of Fell et al. (2017), development of evidence-based healthcare solutions for chronic conditions of the aging population can benefit from community partnership. In this regard, the Maryland Falls Free Coalition (MFFC) is one ideal partner for extending the best practices in falls prevention education. Disseminating the findings of the QI evaluation to the MFFC can be a good strategy for laying the groundwork for partnership with the community.

Policy makers. Dissemination involves not just translation of the research findings to practice or the clinical context, but also distribution of relevant information to the target audience, with the goal of widespread application of the evidence gathered. This includes mechanisms to develop or propose healthcare quality enhancing policies (Johnson, Glasgow, & Guimond, 2016). For this project, as discussed in the previous section, my plan is to disseminate the findings of the QI evaluation to three important healthcare bodies: The Joint Commission Center for Transforming Healthcare (JCCTH), the American Nurses Association (ANA), and the National Quality Forum (NQF).

Information about the QI evaluation results to these three bodies will be used to establish linkages with them.

Particularly, the project site needs the NQF to sustain one of the recommendations of this project to migrate from its modified form of the ANA-NDQNI to the injury falls per 1000 patient days measure of the NQF (2011). Meanwhile, linkage with JCCTH (2020) is essential for support in terms of more sophisticated patient fall safety infrastructure, particularly, the *Targeted Solutions Tool* (TST). Only the JCCTH can present the most convincing and evidence-based arguments and information to generate support for funding in procuring the tool. On the other hand, dissemination of the project findings to the ANA is important for the site's fall prevention efforts because it is a national organization of professionals. The ANA can significantly influence policy, particularly in regard to reduced or complete withdrawal of psychoactive or psychotropic medication administration on older adult patients or those 65 years and older.

Analysis of Self

I present my analysis-of-self in this subsection section, as well as and my scholarly journey toward the completion of this DNP project in the context of my triune roles as practitioner, scholar, and sole project manager-investigator, my project experience, the present, and my long-term professional goals. I pursued a doctoral program in nursing practice, first and foremost, because I have first-hand experience about the needs of nurses and the challenges they face in delivering safe healthcare. Thus, along with my goal for professional development, I enrolled in the DNP program courses

to be better equipped in assuming a leadership role in mitigating the burden of disease through advocacy.

As a practitioner, I grappled with a number of challenges during the early years of my nursing practice. Obtaining certifications significantly filled in gaps in my clinical knowledge and area-specific skills. However, whatever area of practice a nurse is immersed in, and as Scully (2015) argued, the dynamic nature of nursing urgently requires leaders in practice. I witnessed firsthand how the changing healthcare environment and the consequent growing demands yearn for leadership. Nursing practice faces one of the greatest challenges in terms of leadership development.

We need leaders to take up the cudgels for advocacy and to spearhead policy changes for patient safety in healthcare delivery. I believe that this project brought me a step closer to my professional practice advocacy of falls prevention among the most vulnerable population (i.e., adult 65 years and older). I hope to contribute toward influencing policy to reduce or completely withdraw administration of psychoactive/psychotropic medications among older adults knowing that this move will bolster the safety of patients from injurious falls.

As a scholar, I believe in the vision of the American Association of Colleges of Nursing (AACN, 2010) that the practice can evolve into an efficient system of healthcare delivery powered by research evidence for the resolution of issues and in the proactive identification of healthcare problems. My humble contributions to the AACN definition of nursing scholarship is this DNP project and my professional development. The AACN definition of nursing scholarship entails rigorous inquiry for the development of clinical

knowledge through the application of acquired research skills to an issue in professional practice. I believe that the healthcare problem tackled in this project is significant to the profession. Despite volumes of research which address fall prevention and fall safety measures, falls and the consequent injuries persist. In this project, I used run charts to visualize fall rates in a time series, to observe changes in the fall rates over time, and note increases or decreases in falls, which can be traced back to facilitating or hindering measures. Thus, although run charts are simple descriptive measurements of fall rates, it is a creative method of analyzing QI over time. When properly documented, run charts may be replicated or elaborated, and may be peer-reviewed using other quantitative methods.

As a project manager, I am able to have a preview of the responsibilities of healthcare leadership, even for just a short period. Personally, being project manager proved to be the most difficult challenge of the project because leadership is a multifaceted responsibility. My experience as project manager required me at different times to provide direction, offer support, collaborate, coordinate, and advocate for patients, among others. In all these responsibilities, effective communication is a must. My key strength is resilience. I found it doubly hard to be on regular nursing duty while pursuing the DNP degree. There are times when I contemplated on giving up the job or schooling. At the end of the day, and with the realization of my professional goals in view, I was able to strengthen my resolve to complete the project and later disseminate the findings to relevant stakeholders and agencies. I would say that the critical thinking

skills I acquired as part of the DNP program, as well as the rich experiences that honed my decision-making skills, guided my actions as project manager.

Challenges, Solutions and Insights

My greatest challenge in the journey towards a DNP degree is time. I continued my nursing practice simultaneous with the DNP program because I believe one reinforces the other. The DNP project that I embarked on is associated with the most pressing issues in practice. However, I earlier thought that time is always a resource constraint. Managing my own time as a solution to limited time may well be mere rhetoric. My hands have been full even prior to pursuing this DNP degree.

However, my collaboration with fellow nurses proved to be a solution to the time constraint. As I collaborated with a few of them, others also volunteered to cooperate. These nurses motivated me because they said they drew inspiration from the fulfillment shared by the nurses whom I have collaborated earlier. From this experience, I realized that we do not always have to carry our charge all by ourselves, especially if this charge will benefit not just myself, but nursing practice, in general. I just needed a little more creativity to discuss with them how decreases in the run chart of the fall rates coincided with the gains in patient education on fall safety and prevention from summary records in the patient charts. Additionally, patient comments, though informal, expressing how they appreciate the fall prevention education also brought in nurses who are willing to stay after their shift to help in the computations and collation of evidence from the summary records.

Summary

My dissemination plan for this project comprises of a hybrid of the traditional approach and some strategies customized for the purpose of the project. The breadth of planned diffusion of the QI evaluation findings entails a multisectoral process not just within the project site, but within a pre-identified set of stakeholders among partner organizations and policy makers. Particularly, the target audience in my dissemination plan comprises of various stakeholders within the project site, along with a number of point-persons of ideal partners for sustainability of the falls prevention education program and the QI initiative: facility patients, project site nurses and other healthcare personnel, management, administrators, and the patient safety and falls prevention committee, prospect organization partners, community partners, and policy makers.

In this section, I also presented my analysis-of-self and my scholarly journey towards the completion of this DNP project in the context of my triune roles as practitioner, scholar, and sole project manager-investigator, my project experience, the present, and my long-term professional goals. As a practitioner, I hope to contribute toward influencing policy to reduce or completely withdraw administration of psychoactive/psychotropic medications among older adults knowing that this move will bolster the safety of patients from injurious falls. As a scholar, and with the small contribution of this project findings, I look forward to the practice evolving into an efficient system of healthcare delivery powered by research evidence for the resolution of healthcare issues and in the proactive identification of healthcare problems. The most demanding challenge is to act as a project manager. In this respect, DNP students, like

myself can benefit from critical thinking skills, sound decision-making, effective communication, and resiliency to the difficulties of family-personal-professional roles. The greatest lesson I learned from this DNP project is that time is always a resource constraint, but collaboration with like-minded practice nurses can figuratively adjust time as a resource, not as a constraint.

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Appendix A: Facility Documents Used for this Project

Educational Needs Assessment Survey Summary Report: 2015

Hourly Rounding Guidelines

Hospital Survey on Patient Safety Culture Summary Report: 2015

Injuries Secondary to Falls 2014

Injuries Secondary to Falls 2015

Injuries Secondary to Falls 2016

Injuries Secondary to Falls 2017

Injuries Secondary to Falls 2018

Injuries Secondary to Falls 2019

Percentile Ranks of Health and Safety Issues: 2014

Percentile Ranks of Health and Safety Issues: 2015

Percentile Ranks of Health and Safety Issues: 2016

Percentile Ranks of Health and Safety Issues: 2017

Monthly Fall Rates: 2014

Monthly Fall Rates: 2015

Monthly Fall Rates: 2016

Monthly Fall Rates: 2017

Monthly Fall Rates: 2018

Monthly Fall Rates: 2019

Weekly Bed Occupancy Report 2014

Weekly Bed Occupancy Report 2015

Weekly Bed Occupancy Report 2016

Weekly Bed Occupancy Report 2017

Weekly Bed Occupancy Report 2018

Weekly Bed Occupancy Report 2019

Weekly Fall Rates: 2014

Weekly Fall Rates: 2015

Weekly Fall Rates: 2016

Weekly Fall Rates: 2017

Weekly Fall Rates: 2018

Weekly Fall Rates: 2019