Pressure Injury Prevention Education Program for Staff in a Skilled Nursing Facility

Joviane Louis Marcelin, MPH, BSN, RN, AGPCNP-DNP-C

A Group Project Report Submitted to the
Faculty of the School of Nursing at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the
Doctorate in Nursing Practice

Greensboro
2023

Approved by:

Kathryn M. Lawrence DNP, ANP, AACC	Project Team Leader
Autumn Henson DNP, APRN, GNP-BC, WCC	Project Team Member
Wanda M. Williams, PhD, MSN, RN, WHNP-BC, CNE	DNP Program Director

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Dedication and Acknowledgments

I am incredibly grateful to my greatest support system, my wonderful family: husband, parents, and the world's best sisters, who always encouraged and motivated me to keep moving forward.

To my faculty advisor Dr. Lawrence, I cannot express how appreciative and thankful I am for her assistance, support, and encouragement with this DNP project.

Abstract

Background: The development of PIs contributes to increase of cost, illness complications, decrease quality of life, and death worldwide. Early recognition of skin breakdown and pressure-related injury can decrease patient complications, improve patient outcomes, and decrease associated costs. Providing healthcare providers with improved PI prevention education is imperative.

Purpose: This DNP project aims to educate staff in a skilled nursing facility on the early identification and recognition of PI. To reduce the incidence of reported injuries in residents of the facility.

Methods: Using evidence-based practice guidelines, current facility policies, and staging tools, a brief education program was designed for staff interacting with residents frequently. The education was provided informally in the workplace utilizing the PDSA cycle.

Results: A chi-square test was conducted to examine statistical significance between the number of PIs and the number of residents with PIs before and after staff education. When comparing the number of pre- and post-intervention PIs were *p*-value= 0.7928. While the results of the number of residents with PIs pre- and post-education, the *p*-value was 0.2733.

Recommendations and Conclusion: Although the results of this study were not statistically significant, stakeholders can use the results of this project to tailor future PI prevention strategies. The results suggest more education and other interventions are needed to help staff recognize and identify pressure injuries much earlier.

Keywords: pressure ulcer, pressure injury, prevention, education program, skilled nursing facility, long-term care facility

Background and Significance

Wellness is an active pursuit to achieve optimum health and maintain functioning as we progress through the life continuum (*Definition of Wellness*, n.d.). The 2019 *World Aging Report* estimates that 53 million people are currently over the age of 60 years, indicating that this is the largest growing population. This number is expected to reach 70 million by 2030 (*Ageing and Health*, 2021). The World Health Organization (WHO) has implemented the Decade of Healthy Ageing from 2021-2030 (United Nations, Department of Economic and Social Affairs, Population Division, 2019). This initiative is a global collaboration to foster longer and healthier lives. It is focused on four primary areas: (1) how we think, feel, and act towards aging; (2) communities for promoting the abilities of older adults; (3) delivering person-centered care; and (4) providing access to quality long-term care (*Ageing and Health*, 2021).

Correspondingly, the 2019 Centers for Disease Control (CDC) and Prevention National Center for Health Statistics reported that 83.5% of the patient population in skilled nursing facilities (SNF) is over 65 (2019). A 2019 joint report between the Urban Institute and the US Department of Health and Human Services (HHS) issued longitudinal data through 2014, estimating that 58% of people over 50 had received SNF care. Data also suggests that 70% of individuals surviving to age 65 would require long-term services and support, ranging from home health services, therapies, and possible long-term care outside the home. As nursing home staff strive to provide person-centered care, they connect with older adults based on personal experiences instead of illnesses as patients, leading to more patient engagement and better well-being (Kloos et al., 2020). Chronic disease processes and conditions are more common in older adults and more likely to experience several concurrent disease states. These older adults may also experience conditions commonly associated with geriatric syndromes, such as frailty,

urinary incontinence, delirium, pressure injuries (PI) (*Ageing and Health*, 2021), gait, mobility impairments and falls (Appeadu & Boroni, 2022). Moreover, according to the Falls Prevention Facts from the National Council on Aging (NCOA), over 25% of American seniors fall yearly (NCA, 2022). Hospitalization for treating injuries resulting from gait and mobility impairment, deconditioning, difficulties rising from a seated position, cognitive disorders, impaired vision, and generalized pain with walking can lead to admission to long term care (LTC) after discharge (Bordoni & Appeadu, 2022).

Furthermore, the National Pressure Injury Advisory Panel (NPIAP) updated the terminology and staging guidelines in 2016 for PI. The members define a PI, as the most accurate description of this diagnosis, a change in title from pressure ulcers or bed sores as they have been known in the lay community. The NPIAP defines a PI as "localized damage to the skin and underlying soft tissue usually over a bony prominence or related to medical or other devices. The injury can present as intact skin or an open ulcer and may be painful" (National Pressure Injury Advisory Panel [NPIAP], 2016, p. 1). The Joint Commission (2022) notes that an injury occurs due to intense and/or prolonged pressure or pressure in combination with shear. With an increase in the aging population, the possibility of disability may also increase. In 1873 Sir James Paget, a British surgeon, documented a sloughing of subcutaneous tissue and fat due to prolonged pressure, with further assessment of what we now know to be accurate for pressure injuries (Bliss, 1992). A PI was considered unavoidable in chair or bed-bound patients at that time due to extended pressure. The Institute for Healthcare Improvement (IHI) launched "Prevent Pressure Ulcers..." in 2007. For their *5 Million Lives* campaign. Although the members of the IHI admired facilities for attempting to reduce their PIs, they also called for zero PIs in those same facilities. The IHI members identified that most PIs were preventable if the staff

developed and used prevention programs (Duncan, 2007). Despite this recommendation, it is still reported that 2.5 million Americans acquire a PI yearly, with more severe complications seen in critically ill or older populations (Anderson, 2020). Leaving one to question what can be done about PIs if this is a preventable condition.

Moreover, the occurrence of pressures in hospitals has decreased over the last ten years. Unfortunately, this is not true for nursing homes (Bates-Jensen et al., 2019). Pressure injuries that occurred in hospitals received more attention compared to those elsewhere. Not enough attention has been placed on those outside the hospital, including nursing homes and community-acquired pressure injuries (Chen et al., 2020).

Purpose

This group DNP project aimed to educate nursing staff on prevention strategies to decrease new occurrences of facility-acquired pressure injuries in a long-term care facility. This project aimed to reduce the occurrence of PIs by educating staff on proper methods and techniques of prevention. The staff were uniquely selected as they spend more time with the residents than other healthcare professionals within the facility.

Review of Current Evidence

A systematic review of the current literature was conducted to look at data previously collected related to physical complications and costs associated with PI, as well as educational barriers or needs identified with job training involving PI prevention strategies. This included the identification of long-term consequences associated with PI in patients and how this diagnosis impacts healthcare facilities. Qualitative, quantitative, and theoretical data were included in the literature review to set the scope of the problem.

Databases within the University of North Carolina at Greensboro library system were searched using PubMed, PsycINFO, Cochrane, Cumulative Index to Nursing and Allied Health Literature (CINAHL), ProQuest, and Google Scholar. Keywords utilized were: pressure ulcer, pressure injury, prevention, education program, and skilled nursing facility; they were used independently and in combination. A broad search of pressure injury prevention in CINAHL from 2018 to the present yielded 349 results. A search for pressure injury prevention education resulted in 329 studies through a PubMed search over the last five years.

Physical complications associated with pressure injuries

There are many complications associated with PIs. The quality of life of those who develop PIs is significantly impacted (Jackson et al., 2018). PIs cause pain and suffering (Padula & Delarmente, 2019). PIs have also been associated with additional pain and disabilities for the patient, including loss of mobility, increased risk of infection, decreased patient dignity, and increased recovery days (Tinker et al., 2020). With an increased aging population, some of these patients experience decreased mobility, increasing their risk of developing a PI. Some PIs can eventually lead to death (Padula & Delarmente, 2019). In the US, an estimated 60,000-100,000 people die annually due to pressure ulcer-related complications (Haque et al., 2018; Morse, 2019; Padula & Pronovost, 2018). A serious complication reported by the Centers for Disease Control (CDC) is facility-acquired infections. Infection can be a determinative complication of PI's, including local wound infection, soft tissue infection, osteomyelitis, and bacteremia (Mondragon & Zito, 2022). More than 2 million hospital-acquired infections have been reported annually (Haque et al., 2018).

Cost associated with pressure injuries

PIs affect more than 2.5 million Americans annually, with an estimated cost per wound of $20K-$151K, creating more than a $9 billion cost increase in healthcare spending (Burns, 2019a). In a recently published paper, the authors state the cost of PIs to the healthcare system is estimated to be $11 billion annually (Singh et al., 2022). While the patient remains the center of quality healthcare, there are financial ramifications to the patient and facilities. Burns goes on to explain the costs associated with treating patients with PIs are 2.5 times higher than those associated with preventing them (2019a).

Since PIs have a progressive staging system stage 1-4, identification of a stage 1 PI is imperative. Actively treating the PI at this first stage has a multi-level benefit. The cost associated with treatment is reduced. Even though a PI is present, the potential long-term effects for the patient are significantly reduced (Al-Gharibi et al., 2019). As a PI worsens, the injury increases the likelihood of complications and the need for increased patient care and dietary supplementation. Additionally, equipment needs change for the patient being treated, leading to increased costs for the patient and facility (Tinker et al., 2020). PIs have a long-standing connotation for neglect in patient care, resulting in the second most common cause of medical malpractice lawsuits. More than 17,000 lawsuits were filed in 2017, with 87% of rulings in the plaintiff's favor (Burns, 2019a). Out-of-court settlements and jury proceedings have higher payouts associated with more severely staged PIs. Unofficial financial payouts to the plaintiff range from $250K-$300K million for individual cases (Davani, 2022).

Common locations of pressure injuries

Pressure injuries usually occur on skin surfaces covering bony areas (Bates-Jensen et al., 2019; Chen et al., 2020; García-Zapirain et al., 2018). These areas have less cushion, making

them more prone to damage from prolonged pressure and shear force (Chen et al., 2020). Many areas of the body are susceptible to PIs; however, they are most commonly seen on the sacral, buttocks, heels, and trochanters (Afzali Borojeny et al., 2020; Chaboyer et al., 2018; García-Zapirain et al., 2018). The two commonly reported locations for PI in residents at care facilities are the sacrum and heels (Santamaria et al., 2018).

In order to improve care and reduce pressure injuries, it is essential to study its incidence and influence factors (Afzali Borojeny et al., 2020). Afzali Borojeny et al. conducted a global systemic review and meta-analysis to evaluate the incidence of pressure ulcers. The result of that study shows the frequency of PIs occurring at the sacrum, buttocks, heel, and trochanter to be 44%, 15%, 15%, and 4%, respectively (2020). This demonstrates the importance of assessing these specific areas for evidence of pressure injury during a physical exam.

Risk Factors

Many factors are associated with the increased occurrence of PI. Boyko et al. (2018) describe intrinsic and extrinsic conditions that can lead the way for PI to develop. Intrinsic is defined by the *Merriam Webster* dictionary as, “originating or due to causes within a body or organ;” extrinsic is defined by *Merriam Webster* dictionary as “originating from or on the outside.” (Merriam Webster, 2023). PIs can occur due to extrinsic causes, such as prolonged pressure on an area of the skin, prostheses, restraints, and skin hygiene. Additionally, residing in a nursing home is also included as one of the extrinsic factors. Intrinsic causes include poor nutritional status, disease conditions like diabetes, spinal cord injury, and immobility. Most nursing home residents have at least one of these intrinsic or extrinsic factors, placing them at a higher risk of developing PIs (Boyko et al., 2018).

Three management goals identified according to the Wound Ostomy Continence Nursing (WOCN) guidelines from the 2016 *Prevention and Management of Pressure Injuries (Ulcers)*. The first goal is to identify those at risk for developing PI and to initiate early prevention. The second goal is to implement a plan to maintain skin integrity, prevent damage, and maintain wounds according to current patient conditions. The third goal is implementing cost-effective strategies to prevent and treat pressure (WOCN 2016 Guideline for Prevention and Management of Pressure Injuries (Ulcers), 2017). It is essential to identify risk factors that contribute to PI development. Incontinence and poor nutritional intake can lead to the development of PIs, and routine assessments should be completed for proactive evaluation of intrinsic causes. Decreased mobility, perfusion alterations, and history of previous PI status should be completed during the initial and routine assessment. Findings in the literature review identified by Jaul et al. (2018) show that identifying key risk factors and chronic conditions affects the development of PIs. However, certain intrinsic conditions, such as diabetes, cerebrovascular accident, and advanced dementia, are strongly associated with the development of skin breakdown but remain unavoidable.

Mobility. Older adults, particularly those with limited mobility and other chronic conditions, are at an increased risk for developing PI (Abdellatif et al., 2020). Individuals who present with the inability or are unable to move, reposition themselves, or are immunocompromised are categorized as a high risk of developing PI (Wood et al., 2019). Lack of mobility causes increases in the amount of time compression is exerted on a particular area of the skin resulting in a PI. Lack of mobility is a main predisposing factor for a PI to develop (Boyko et al., 2018). Most residents in a SNF require assistance with activities of daily living (ADLs). Since the residents cannot move on their own, they will likely stay in the same position

for an extended amount of time, leading to an increased risk for a PI (Sethuraman et al., 2020). Hospitalization for the treatment as a result of injuries from gait and mobility impairment, deconditioning, difficulties rising from a seated position, cognitive disorders, impaired vision, and generalized pain with walking can lead to admission to SNF after discharge (Appeadu & Boroni, 2022).

Comorbid conditions. Another major factor that places the elderly at increased risk for PI are comorbid conditions. Chronic diseases such as diabetes mellitus, Parkinson's disease, ischemic heart disease, chronic pulmonary disease, advanced dementia, and renal disease all increase susceptibility to developing PIs or skin-related concerns. Other conditions such as anemia, infection, incontinence, persistent vegetative state, malnutrition, and polypharmacy could also play a role in PI development (Jaul et al., 2018). The NPIAP has further outlined certain conditions to be unavoidable despite optimal care given. Such situations include decreased cardiac output, hypotension, severe malnutrition, and inadequate peripheral perfusion (Jaul et al., 2018). Furthermore, advanced dementia, diabetes mellitus, and cerebrovascular accidents are chronic diseases with the most significant association with pressure ulcer development.

Management Goals

Management of conditions and the complications that can arise are a critical component of focus in prevention and treatment (Chung et al., 2022). In avoiding PI, it is imperative to identify the antecedents of the problem and identify factors for prevention. Expeditious diagnosis and treatment are essential, and researchers focus on machine-learning algorithms for risk assessment and prevention from intrinsic and extrinsic predisposing factors (Ribeiro et al., 2021).

With the aging population, PIs can impact chronic health conditions such as obesity, diabetes mellitus, and cardiovascular disease (Boyko et al., 2018).

Interventions for prevention

In 2016 pressure injury stage and terminology were modified to differentiate mucosal and other skin injuries which resulted from medical devices (Delmore & Ayello, 2017). Additionally, Delmore & Ayello reinforced the importance of closely monitoring medical devices implemented in the care of the patient in LTC (2017). Although frequently initiated in treatment, the equipment used to assist the patient can also contribute to the risk of developing PIs. Foley catheters, oral gastric and nasal gastric tubes, compression stockings, cervical neck collars, and splints are a few of the appliances that have been shown to increase the incidence of PIs. These devices should be removed at least every shift and the skin assessed (Delmore & Ayello, 2017). The article identifies oxygen tubing as the most common device linked to skin breakdown and notes that proper preventative measures and body positioning are vital factors that can decrease the risk of PIs.

Research conducted by Sharp et al. indicates that two-hour turning and repositioning intervention on patients with impaired mobility was ineffective at preventing PIs (2019). The researchers concluded that PIs continued to develop despite 2-hour repositioning. Therefore, they recommend alternating pressure ulcer air mattresses instead of the two-hour turning protocol (Sharp et al., 2019). Disturbingly, the researchers suggested that two-hour repositioning may be a form of unintentional abuse rather than a preventative measure for patient safety and are poor practice (Sharp et al., 2019).

Risk assessment tools

PI risk assessment tools often identify patients at highest risk of developing PIs. The three most common assessment tools utilized are the Braden Scale, the Norton Scale, and the Waterlow Scale. Both the Braden and Norton scales have shown validity and reliability. The Braden Scale comprises six subscales, sensory perception, moisture, activity, mobility, friction, and shear, measuring the patient's risk of developing a PI (Huang et al., 2021). The Norton Scale is another tool utilized to assess risk factors; however, this tool does not address the risk of friction, which may result in the presence of a PI (Huang et al., 2021). The Waterlow identification tool assesses different patient factors that include assessment of skin, gender, age, continence, mobility, nutrition, medication, tissue malnutrition and neurological deficits, and major surgery or trauma (Charalambous et al., 2018).

Moore & Patton conducted Randomised controlled trials (RCTs) study to compare the effectiveness of using pressure ulcer risk assessment tools compared to clinical judgment at reducing PIs in healthcare settings (2019). The assessment tools included in this study are the Waterlow tool, the Ramstadius tool, and Braden risk score (2019). The authors independently performed study selection and gathered data using the Risk of Bias Assessment (Sterne et al., 2019) and GRADE assessment (Meader et al., 2014). The GRADE (Grading of Recommendations Assessment, Development, and Evaluation) approach was designed to assess the quality of evidence of recommendation and has been established as an international standard (Chen et al., 2022). In addition, the Risk of bias assessment helps establish transparency of the results and findings of the evidence (Ballard & Montgomery, 2017). The researchers noted that many national guidelines recommended using PI risk assessment tools. Unfortunately, the reviewers did not identify any evidence which verified that these tools decreased PI incidence.

Educational barriers and methods for staff training

Malcolm Knowles was an American educator known for developing a theory of adult learning, known as *andragogy.* Knowles's theory is important as he focused on identifying the differences between what adults already know and what they can learn. His theory is based on the foundation that learning is a lifelong process, and those teaching methods guide the development of adult learning. He also addresses the differences between the learning process for adults and children. Knowles describes six principles of adult learning which include (1) the need to know, (2) self-concept, (3) prior learning experience, (4) readiness to learn, (5) orientation of learning, and (6) the motivation to learn (Mukhalalati & Taylor, 2019). It is important to understand adult learning methodology to successfully present material to the facility's staff that can be utilized throughout ongoing practice.

Moreover, with Adult Learning Theory, rather than simply focusing on what adults want to do, researchers are looking at how to make training effective for adults by applying the new information. Adults need to connect with the subject being taught, understand its relevance, and determine if they want to learn something new or build on what they already know (Abedini et al., 2021). Teaching adult professionals may be more challenging because of prior educational level or knowledge. Therefore, research by Knowles was helpful in directing the process of teaching the staff. Presenting a variety of teaching activities can also reinforce the material. Teaching methods should address the adult learner's different auditory, tactile, and visual learning styles. It is necessary for participants to be able to generate new ideas based on their prior learning experiences (Loeng, 2018).

Therefore, when addressing PIs in the long-term care environment, all stakeholders need to understand the impact on both patients and staff that this issue can pose from their

perspectives and retain the information through their individual learning styles. Education on PI prevention should be presented frequently and be flexible in pedagogy to apply different learning styles. Learning style preferences are influential to achievement and demonstrate a correlation between learning style and performance (İlçin et al., 2018). Additionally, the impact of education can be assessed by the leadership with the facility's quality indicator measures and should be routinely monitored. According to the Agency for Healthcare Research and Quality (2019), long-term care quality is measured using performance data driven by the Minimum Data Set (MDS) assessment. This facility must submit this information, which is a federally mandated process. This data assesses safety measures, including PIs, urinary tract infections, weight loss, and decreased activity of daily living. Other measures identified in this data set include patient-centeredness measures that include worsening signs and symptoms of depression or anxiety and timeliness measures of when the patient received vaccinations. The MDS is completed every quarter and is guided by the U.S. Department of Health and Human Services' Office for Civil Rights. This office will guide how long-term care facilities can ensure compliance and obligations by administering the Minimum Data Set (MDS) to ensure residents receive the appropriate services.

A quality indicator deficiency should be addressed collaboratively by stakeholders if it is identified. Based on the education provided, each team member should begin to utilize a problem-based approach and implement the strategies and interventions as learned. As outlined in Knowles' Adult Learning Theory (1998), education can be proven effective in its application by decreasing numbers of facility-acquired pressure injuries.

Conceptual Framework/Theoretical Model

Mezirow's Transformational Learning (MTL), (1991) Theory was selected as the theoretical model for this project. Mezirow's' seminal research defined transformational learning as "the process by which we transform our taken-for-granted frames of reference (meaning perspectives, habits of mind, mindsets). To make them more inclusive, discriminating, open, emotionally capable of change and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action" (Mezirow, 1991, p. 67). Personal growth and application of previous experiences allow a shift to an advanced understanding of previously taught concepts. Mezirow further explains the MTL as a learning process grounded in communication and adult learners applying critical reflection of assumptions (1998).

Moreover, nursing educators have attempted to bridge the gap in knowledge and areas where care improvement has been indicated. By implementing MTL learners' experiences, educators formulate the starting point for improving knowledge of PIs in the nursing staff. Building on experiences, negative or positive, allows the learner to transition to critical reflection, furthering the ability to question and affirm the information the teacher has presented. Learners' responses are based on individual thoughts, feelings, and convictions, giving way to rational discourse. This becomes the learner's transformational framework, allowing them to reflect and implement new information (Welton, 1995, pp. 39–70).

Methods

This project aimed to educate staff in a SNF on the early identification and recognition of PIs. After reviewing current literature, it was evident that the financial burden, approximately $26 billion annually, to the healthcare system and patient. Making it a clear indication for staff education on the topic of PI, as this is the primary issue contributing to these costs (Morse,

2019). Secondary concerns include patient pain, decreased mobility, and invasive procedures or treatments (Sen, 2019). Notably, the most urgent call for change is the 100,000 deaths in patients related to PIs annually; therefore, patient well-being must be prioritized (Morse, 2019).

The goal of staff consenting to and participating in this education was 80% of the eligible staff who would have received education by the end of the implementation phase. This included staff that interact with the patients regularly, including but not limited to registered nurses, licensed practical nurses, certified nursing assistants, physical/occupational therapists, and activity staff. To ensure as many staff were included, education was offered on multiple days covering all shifts in the facility- 1st, 2nd, and 3rd. A log was kept with the date, time of education (i.e., date and shift), department class (i.e., RN, LPN, CNA, therapy), and staff initials to ensure staff had received education.

Design

The design of this DNP project was a quality assurance and performance improvement (QAPI) plan. We reviewed the MDS data from the project site for PIs documented on the facilities residents. The U.S. Centers for Medicare & Medicaid Service (CMS) describes quality assurance as a process to ensure that standards of care have met an acceptable level and performance improvement identifies areas that may need improvement. Performance improvement can improve good care (*QAPI at a Glance*, 2021). CMS has identified five elements in developing, implementing, and sustaining a QAPI. They are interrelated and will be transformational in the working process of the QAPI, customizing the plan to fit the facility's needs concerning the residents and staff. They are as follows:

1. Design and scope- a QAPI should be ongoing and address the facility's care systems.

2. Governance and Leadership-the administrative and leadership team ensure resources are in place to conduct QAPI and develop a culture that seeks input from staff, residents, and families.

3. Feedback, Data Systems, and Monitoring-the facility monitors processes and outcomes with the QAPI and provides feedback to those involved.

4. Performance Improvement Projects (PIPs) - a focused effort on an identified problem in one area or the overall facility.

5. Systematic Analysis and Systemic Action- an organized and structured process is used to determine the underlying cause of the identified problem and focus on improving the delivery of care surrounding that problem (*QAPI at a Glance*, 2021, p. 9).

This project allowed for the examination of data collected on current facility residents and the rate and severity of documented PIs before staff education. The education provided to the staff was formulated from evidence-based wound care and PI standards of care. Which also reiterated the facility's current processes and policies for assessment, documentation, and follow-up care for the residents with PIs.

Translational Framework

The Plan-Do-Study-Act (PDSA) model was employed for this DNP project. Involving four steps to guide the process of implementing strategies for improvement and evaluating the outcomes for effectiveness. Using a structured experimental approach to learning and testing change, clinicians can improve patient care (*Plan-Do-Study-Act (PDSA) Directions and Examples*, 2020).

Dr. Edward W. Deming created the Plan-Do-Study-Act (PDSA) model in the 1950s. The model is also called the Deming Wheel and Deming Cycle (*PDSA Cycle - the W. Edwards*

Deming Institute, 2022; *Plan Do Study Act (PDSA)*, 2022). The PDSA model is from a three-step scientific cycle of specification, production, and inspection developed by Mr. Walter A Shewhart in 1939, known as the *Shewhart Cycle* (Connelly, 2021; Willis, 2021). Mr. Walter A. Shewhart, a mentor of Dr. Deming, introduced him to this concept of an integrated learning-improvement model (*PDSA Cycle - W. Edwards Deming Institute*, 2022). The PDSA model is a modification of Shewhart's original three-step process (Connelly, 2021; Willis, 2021).

The revised PDSA model is a four-step method of improving processes or carrying out change through problem-solving (*Plan Do Study Act (PDSA)*, 2022). As a systematic process for continuous improvement, the PDSA Cycle provides valuable learning and knowledge for the improvement of products, processes, and services (Christoff, 2018; *PDSA Cycle - the W. Edwards Deming Institute*, 2022). In addition, the PDSA model is an organized methodology for experimental learning and evaluating change (Connelly, 2021). Therefore, this model is often used for quality improvement, and is considered effective (Christoff, 2018; McNicholas et al., 2019).

The PDSA model was originally used for utilization in industrial management; however, it is extensively used in the healthcare system for quality improvement (Christoff, 2018; Knudsen et al., 2019). In the 1990s, the PDSA model was introduced in the healthcare field and is used as the basis for several quality improvement developments (Knudsen et al., 2019). Substantial enhancements or improvements are seen in patient care, and outcomes have been noted when all segments of the PDSA methodologies are used (Christoff, 2018). Additionally, this type of QI methodology which started in the industry has decreased error when used in healthcare (Christoff, 2018). A simplified version of this approach has been adopted in health

care to facilitate small cycles of change that can be completed relatively quickly and begin with a small group of patients (Connelly 2021).

The PDSA consists of four steps: Plan, Do, Study, and Act. The first step is the *Plan* or planning stage. In this step, the purpose, goals, and strategies to fulfill the objectives or objectives are formulated. Key players and stakeholders who will be involved are also identified (*PDSA Cycle - the W. Edwards Deming Institute*, 2022). Also, in the *Plan* stage, the educational documents were created to be presented to the nursing staff. The documents focused on PI education and prevention methods. The electronic materials consisted of easy-to-understand visual presentations using PowerPoint and took place at the LTC facility.

The second stage of this model is *Do*. In this stage, the strategies outlined or laid out during the planning stage are implemented. This stage is when the actual project implementation begins (*PDSA Cycle - the W. Edwards Deming Institute*, 2022). For this DNP project, the educational plan was implemented and put into action. The staff education and presentations occurred during the scheduled times that had previously been agreed upon with senior leadership during the planning phase. The PowerPoint presentation was presented to the staff at the LTC facility. Presentations were held during day and night shifts to reach as many staff as possible.

The third stage of the PDSA model is *Study*. In this phase, the results are obtained for the data collection stage. Additionally, areas for adjustment and improvements are identified (*PDSA Cycle - the W. Edwards Deming Institute*, 2022). At this stage of the DNP project, we collected the number of PIs three months after the staff education had been completed. The results were compared to the PI data obtained prior to the education.

The fourth and final stage of the model is the *Act* stage. In this stage, it will be determined whether or not the plan was effective, if the goals and objectives were met; and if changes or adjustments are needed. Act: For the DNP project, the results were evaluated, and also shared with the stakeholders of the LTC facility to decide the next steps (*PDSA Cycle - the W. Edwards Deming Institute*, 2022).

Population

Residents in SNF or LTC are at increased risk for PIs due to other health conditions. The focus of this project was to provide education on the prevention of PIs to all staff interacting with the patient's environment. Staff included in the educational sessions were registered nurses (RN), licensed practical nurses (LPN), certified nursing assistants (CNA), physical therapists (PT), physical therapist assistants (PTA), occupational therapists (OT), occupational therapists' assistants (OTA), and activity staff. To ensure all staff were included, education was offered on multiple days covering all shifts in the facility- 1st, 2nd, and 3rd. A log was kept with the date, time of education (i.e., date and shift), department class (i.e., RN, LPN, CNA, therapy), and staff initials to ensure staff has received education. At the time of education 52 staff members across specialties, met eligibility requirements to participate in the education sessions.

Each group of staff interacts with the residents intermittently in the patients' environment and within the facility's common areas. RNs are responsible for admission skin assessments, unit leadership, and resident interaction. LPNs are responsible for a large portion of the patient's day-to-day care, including medication administration, care planning with providers, and wound care as ordered by the provider. CNAs assist the resident with eating, repositioning in the bed and/or chair, ambulating, toileting, and bathing. They are with the patient throughout the day and are often the first to notice skin changes. PT, PTAs, OT, and OTAs, are with the patient during

scheduled therapy sessions and are essential in positioning and strength training for residents. These therapy sessions could be in the patients' room, gym, or therapy areas to meet the patients' rehabilitation needs. Inclusion criteria will be that the staff provides direct care to the residents, works full-time or part-time, is licensed in North Carolina, and can consent to participation. The staff listed above will be included in the goal of 80% of persons receiving education through this DNP project.

While there are other functions and departments in which staff work in the LTC, not all will be included in the education sessions as described. Those excluded from the education sessions are as follows: dietary staff, environmental services, lay staff and/or volunteers, administrative support staff, LTC administration, and any staff on FMLA regardless of occupation class or working from home.

Setting

The DNP project occurred in a not-for-profit LTC facility in rural northeast North Carolina. Serving the community since 2014, the facility is currently certified for 100 beds and has more than 80 residents. Payor sources include private pay, Medicare, Medicaid, and private insurance. This site’s staff offers various services on its campus for the older adult population, including independent living assisted, memory care, and long-term care. Within the long-term care facility, the nurses and other professionals provide short-term and long-term rehab services, hospice, respite, and palliative care (*Medicare.gov*, 2022).

Project Implementation

The stakeholders were involved in a discussion of the project objectives before the project began. These stakeholders were identified as the director of nursing at the SNF, the

assistant director of nursing, the wound care advanced practice provider, the infection prevention nurse, and the wound care nurse. Permission was obtained from the stakeholders (Appendix A).

Key topics included in the education for staff were PI risk factors, "hot spots" areas that are most likely for PI occurrence, preventative measures including assessment and patient positioning, and an overview of wound staging (Appendix B). The education was completed on the nursing units in a brief 10-minute presentation to eligible staff. After each education session a one-sheet reference page (Appendix C) including common areas of occurrence, lying and sitting, treatment and prevention tips, was left. Each unit was provided copies of the reference sheet for posting in the break rooms and on the education boards in the nursing units.

Instruments

Microsoft Excel was used for data entry and analysis. Data was obtained from the MDS data and the facility's wound specialist's notes from her chart review.

Timeline and critical milestones

Beginning with topic selection through data analysis and results dissemination to the stakeholders. This project began in Fall 2020 and culminated in Spring 2023. Figure 1 below shows the timeline and milestones for the DNP project.

Figure 1

Timeline and Critical Milestones

IRB Approval

Due to the overwhelming reports of increased pressure injuries, this investigator and co-investigators recognized the need for pressure injury prevention in the long-term care environment. The implementation process began with topic selection, defining the problem and significant research. A facility was selected with stakeholder approval. We sought approval from The University of North Carolina at Greensboro Institutional Review Board (IRB) prior to the implementation of the project.

After determining the topic of education and receiving stakeholder approval, the IRB approval process was started. IRB approval was only necessary through UNCG since the DNP project implementation site is an independent facility. After the appropriate documentation was completed, faculty approval obtained, the IRB approval process was started in February 2022 as exempt. This project was a quality improvement process without direct human subject research, with IRB approval granted in June 2022.

Pre-Intervention Data Collection

After receiving approval from the stakeholders and IRB, relevant data was collected from the facility. A breakdown of de-identified information on each patient with an identified PI was collected, including – gender, age, area involving pressure injury, PI staging information, and patient disposition as baseline data. After the data was gathered for the review period, meetings were held with facility staff in small group settings or one-on-one to review care.

Three months, May-July 2022, of data regarding patients with identified wounds were collected. Data was received from the wound care nurse, wound care advanced practice provider and patient medical records. A meeting was held with the infection prevention/quality assurance nurse and director of nursing to review patient demographics and wound identification in the medical record. After reviewing each patient's record, the pressure injuries acquired in the facility and documented present on admission were included in the pre-education wound assessment (Appendix D). Data points were compiled in the pre-education data collection including gender, age, location of PI, facility acquired versus present on admission and patient disposition at the end of the three-month collection.

Intervention

Next, a PowerPoint presentation and flyer was completed (Appendix B and C). A 10-minute presentation was presented onsite. This material served as the interventional piece. The power point presentation identified objectives to state: understanding of how PI develop, review of PI stages, and to assist in role identification to PI prevention. This material addressed cost, patient impact, and facility impact. High risk groups and prominent body areas that are at high risk for PI were identified. Visualization aides were presented to assist in identification of staging. Implementation guidance was also provided for early identification, ways to minimize

pressure, management of moisture and the importance of nutrition. The education was presented to staff that met the inclusion criteria, in an informal manner, utilizing an electronic device and printed materials were left for staff in each unit that were unable to attend in person.

Post-Intervention Data Collection

After the staff education was completed, time was allowed for staff to implement the information learned through the education in their care of facility residents. This was to ascertain whether the new knowledge was incorporated into their care and whether this change could make a difference in the incidents of PIs for the residents. After three months, additional de-identified data on PI occurrences was collected and compared to the pre-education data. The project's goal was twofold, (1) the staff will either see a reduction in the number of pressure injuries incurred while in the facility, and/or (2) if an injury occurs, earlier identification and treatment of the PI will be seen to avoid potential complications.

The data collected was stored in a password protected personal computer/laptop and not shared with any of the stakeholders during evaluation. The laptop was in the possession of the PI at all times, or locked in a secure location. The data collection documents were secured in a locked file that did not allow access to anyone not directly involved in the DNP project. The data was not viewed or analyzed in a public place such as a coffee shop or library where confidentiality could not be maintained. Data was reviewed only by UNCG faculty involved in the project to include the statistician.

Data Analysis

After education was completed over the course of several shifts in October 2022 to nursing staff and therapy staff, the implementation period began. The period of implementation was November-December 2022 and January 2023, with retrospective data collection in February

2023. Data analysis was based on chart review of pressure injuries between the months of November 2022 to January 2023.

The chi-square test was used to analyze the pre- and post-intervention. We compared the number of pressure injuries before education to those over three months post-educational intervention. Stages and location of PIs were also calculated. The software used to analyze the data was Microsoft Excel version 16.70.

Results

Evaluate Outcomes

The project principal investigators implemented staff education at the facility. Demographic and wound information was obtained from the facility's wound care Advanced practice provider three months after staff education. Data was reviewed over one week and organized into an excel speed sheet for analysis.

The outcome of interest in this project was the number of pressure injuries post staff intervention—the occurrence of pressure injuries over three months after staff education was analyzed. The number, location, and stages of pressure injury occurrence post staff education from November 2022 to the first week of January 2023 are listed in Appendix D. A total of 12 patients developed pressure injuries between November 2022 to the first week of January 2023. There were six males and six females, and their ages ranged from 71-103 years old. The average age of the residents with documented PIs was 85 years old. The demographic data of the residents included in the project are presented in Table 1 and Figure 2.

Figure 2

Number and Ages of Residents With Documented Pressure Injuries

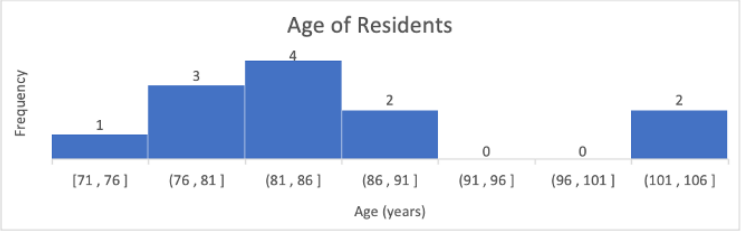


Table 1

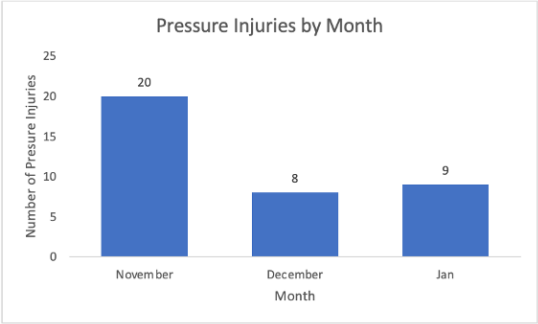
Gender and Ages of Residents With Documented Pressure Injuries

Gender	Age
Female	103
Female	87
Male	90
Female	84
Female	82
Female	103
Male	79
Male	71
Female	82
Male	80
Male	78
Male	85

The breakdown of the pressure injuries for the months of November 2022 to the first week of January 2023 is listed in Figure 3 below.

Figure 3

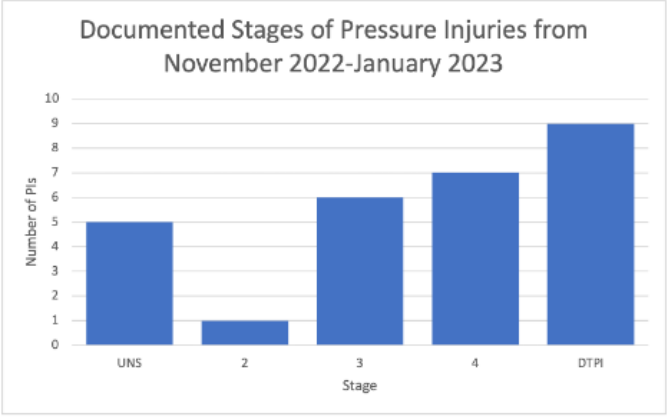
Number of Pressure Injuries by Month



The documented stages of pressure injuries at the facility during the three-month post staff education ranged from unstageable to deep tissue pressure injuries (DTPI) (see Figure 4 below).

Figure 4

Number and Stage of Pressure Injuries



The number of documented pressure injuries post staff education for November 2022 to January 2023 combined is 28 total on 12 patients (6 were present on admission and 22 facility acquired); 11 of the PIs were documented as resolved or heeled at the first week of January 2023 (see Appendix E).

A chi-square test was conducted to examine for statistical significance between the number of pressure injuries pre- and post-education and the number of residents with pressure injuries before and after education. The chi-square results comparing the number of pre- and post-pressure injuries were *p*-value= 0.7928. Since the *p*-value is greater than 0.05, it can be concluded that there was no statistical significance in pre- and post-pressure injuries. We also used chi-square to compare the number of residents with pressure injuries pre- and post-education; the *p*-value was 0.2733. The *p*-value was also greater than 0.05; therefore, it was not statistically significant. Figure 5 and Figure 6 show the comparison of the observed counts for pressure injuries and the number of residents with documented pressure injuries before and after staff education. The locations of pressure injuries for three months post-staff education was also documented. A detailed breakdown of each location is listed in Figure 7 below.

Figure 5

Pressure Injuries Prior and Post Staff Education

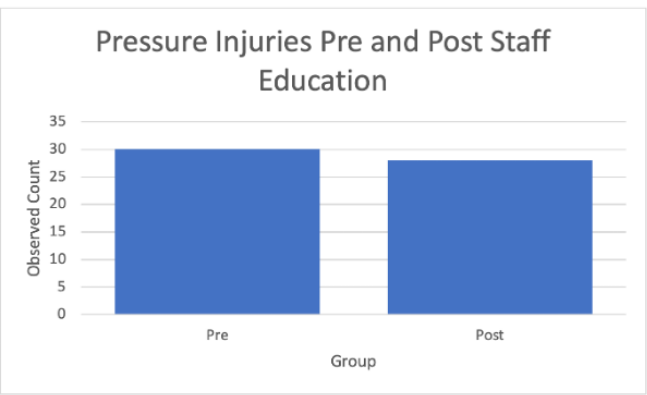


Figure 6

Number of Residents with Pressure Injuries Prior and Post Staff Education

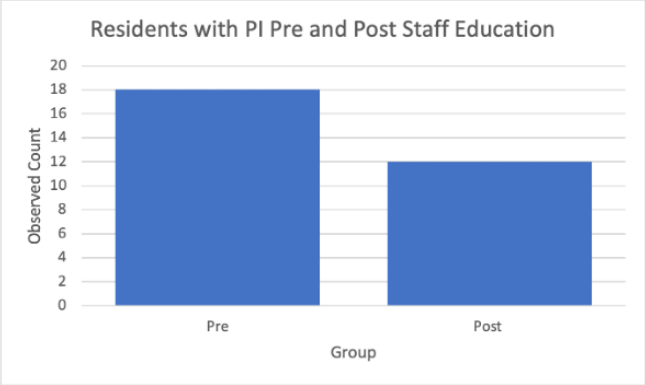
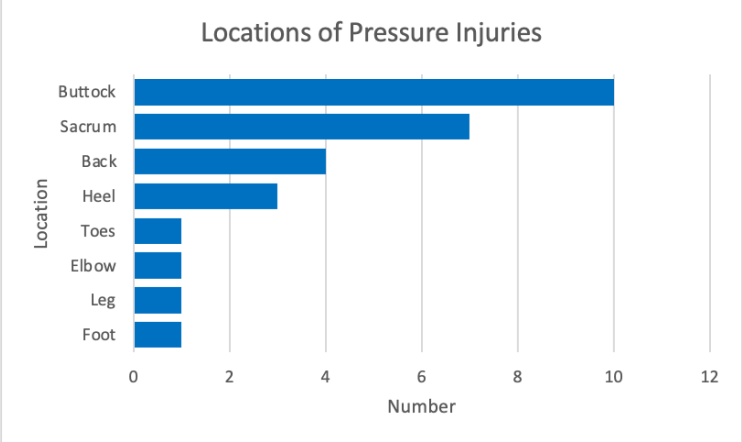


Figure 7

Locations of Pressure Injuries



Identify barriers to success

A significant barrier to a successful outcome was short staffing. At the facility, there was one LPN and one CNA per pod. There are a total of four pods and approximately 80 residents at the facility. As a result, the staff was busy during their shift, limiting time for education. A second barrier was the number of staff who received the education. Our initial goal was to

provide direct education to at least 80% of the staff. However, only 28 of the 52 staff employed received the education. Therefore, only 54% listened to the presentation. This was primarily due to the staff's varied shifts or working hours. Some staff worked PRN, part-time and partial shifts and were not available or onsite during educational periods. A third unexpected barrier investigators met during this study was the inability to obtain all the data for January 2023 as initially planned. Due to time constraints, analysis was conducted with missing data, and current results cannot not be generalized to other long-term/ skilled nursing facilities.

Identify strengths to overcome the barriers

In future studies such as this one, there are many items to consider which could help remove some barriers and possibly yield promising results—first, the timing and method of staff education. Due to limited time, the education presented in the facility was concise and to the point. Additionally, the education was presented while the staff was busy working; as a result, education was brief to prevent disruption of care. Perhaps investigators should work with stakeholders to have specific times prearranged where the staff could have uninterrupted time to focus strictly on the educational material. It is valuable for those involved to have time to attend the education presentation (Wood et al., 2019).

Second, to ensure timely data collection, investigators should preschedule meeting times with stakeholders, for example, every two weeks or monthly, to obtain data instead of waiting until the end to collect all data. In the pressure injury study conducted by Woods et al., the numbers of PIs were collected each month (2019). Had we done similarly, this could have made it easier for investigators to receive all data on time. Third, approximately half of the staff received the education; more could have attended if a designated time had been set aside. Fourth, having frequent PI education refreshers for the staff can also be beneficial. The refresher

education can occur monthly, quarterly, or annually. Lastly, short staffing can make it challenging to implement interventions promptly (Wood et al., 2019). Therefore, it is crucial for stakeholders to find effective ways to help reduce staff shortages, which can result in reducing and preventing pressure injuries at their facilities.

Discussion

In this quality improvement project, we set out to see a reduction in pressure injury occurrences and earlier identification of pressures. Unfortunately, the total number of PIs post-staff education was decreased by only two and there were no documented stage 1 pressure injuries. Most of the stages noted were deep tissue pressure injuries (DTPI). These findings suggest that staff did not notice the PIs in the early stages. This coincides with the work of Chung et al., (2022) who found that LTC staff were not aware that stage 1 pressure injuries reliability predicted the progression to stage 2. It was not undertaken by nursing staff to assess a blanchable erythematous area, noted as stage 1, by using light finger pressure or visual assessment. Their research supported this DNP project data, emphasizing the importance of increased knowledge and adequate assessment for timely intervention, as well as for staff to be able to distinguish between stages for quicker intervention (Chung et al., 2022).

Furthermore, this DNP project data revealed that staff education did not impact reducing pressure injuries or identifying them earlier. After the staff education, the investigators hoped to see a significant reduction in pressure injuries at the facility. This was also found in the research of Porter-Armstrong, et al., (2018), and O'Connor et al., (2021), who were unable to unequivocally determine the education of LTC staff on pressure ulcer prevention yielded significant improvement in the incidence of pressure ulcers. The researchers acknowledged that there was a paucity of evidence that existed in this area due to the low-certainty of evidence

(Porter-Armstrong, et al., 2018; O'Connor et al., 2021). More research is required to make more definitive conclusions for staff education.

This investigator also noted the locations of pressure injuries during the three months post-education. Most PIs noted were located at the buttocks or 35.7%. The second location was the sacrum at 25%, followed by the back and heel at 14.2% and 10.7%, respectively. These primary findings are consistent with research showing that the top three most seen PI locations are on the sacral, buttocks, and heels (Afzali Borojeny et al., 2020; Chaboyer et al., 2018; García-Zapirain et al., 2018).

Many factors impacted the outcome of this project. The original plan of this project was to include pressure injury for three months (November, December, and January) post-education. However, investigators did not receive data for the first week of January. Therefore, the results did not include three weeks of data from January. A second major key element that can also have statistical significance in this project affected the result was the sample size. The sample size was small, which can impact statistical significance. This point is supported through the NIH, by Blackford, (2017), who notes that critical, reliable and valid data are influenced by sample size. Small sample sizes are very prone to errors, both in false negative and false positive results and decreasing statistical significance (Blackford, 2017).

Moreover, the short timeframe allowed for the DNP project could also have affected the results. For example, the pressure injury study conducted by Woods et al., involved thirteen healthcare organizations and lasted two years. In that study, there was a 36% reduction in PIs after one year and a 33% reduction after the second year (Wood et al., 2019) in contrast to this project which was conducted in one site and lasted three months. However, it is important to highlight that though the results were not statistically significant due to the timeframe and

sample size, there were reductions in the total number of PIs and the number of residents with new PIs. There was a decreasing trend in the first two months following the education (see Figure 3). If the DNP project timeline had been longer, the number of pressure injuries could have continued to decline, thus having a more significant impact on the results. A longitudinal study of at least 1 year is warranted with reinforcement of education for a more in-depth determination of staff education and PI reduction outcome data.

It should be also noted that short staffing is closely tied to quality of care, an issue that a lot of nursing home facilities are facing. This could also play a role in identifying pressure injuries at later stages. As stated earlier, there was one LPN and one CNA per pod. There are a total of four pods and approximately 80 residents at the facility. Further studies on pressure injury prevention that account for these variables and barriers need to be undertaken. This is also supported by the research of Vellani et al., (2022), who surveyed LTC facilities before during and after the COVID 10 pandemic concerning staffing shortages in LTC internationally. They noted that with the decrease in staffing essential workers declined, the LTC sites were not regulated or inspected; therefore, less support was available to meet the demands required of the residents and the remaining staff. The researchers inquired as to who was considered essential and non-essential, who made this determination, and how these decisions impacted the quality of care of the LTC residents. They found significant variability of what constituted appropriate staffing for high quality care (Vellani et al., 2022).

Furthermore, despite their lack of time, the staff were willing to listen to the presentation, eager to learn, and engaging. This suggests that if the staff was allotted time, they could fully absorb the presented educational material. This finding is also supported by the research of Mlambo et al., (2021) who determined that continuing professional development (CPD) is vital

for nurses who want to keep their skills current in all aspects of patient care. The attitudes and motivations of the nurses as well as their perceptions of barriers, such as organizational culture and administrative support, impacted participation. Moreover, the researchers found that the availability of learning opportunities in the workplace environment as well as management's appreciation of the nurse's dedication to CPD were critical to supporting the nurse's participation in educational sessions (Mlambo et al., 2021).

Mezirow's Transformational Learning theory (1991) was selected as the theoretical model for this project. This theory combines the adult learner's personal and professional experiences to allow for growth and a better understanding of the concept they previously learned. The PIs education was provided to the staff, which they could use to correctly identify and report pressure injuries. The use of this learning theory was instrumental and proven to be significant in the support of the educational knowledge for the professional goals and skill development of the nurses caring for LTC residents.

The Plan-Do-Study-Act (PDSA) model was employed for this DNP project. There are four steps in this model. During the *planning* stage, we established the project's purpose, objectives, and strategies. Next, we presented to the staff in the second step, *the Do* stage. In the study's third stage*,* we collected and analyzed data three months after staff education. The fourth and final stage of the model is *Act;* we evaluated the results and shared them with stakeholders. Contrary to a similar pressure ulcer/injury reduction study by Wood et al., (2019), which also used the PDSA model, we did not achieve a comparable outcome to their study. Nonetheless, following the outlined process was beneficial to implementation of the project intervention, staff learning and data outcomes; the PDSA model was found to be an effective translational model foundation.

Conclusion

Pressure injuries are a serious condition that causes complications, suffering, decreased quality of life, and much more to many skilled and long-term care facility residents. Although the results of this study were not statistically significant, stakeholders can use the results of this project to tailor future PI prevention strategies. Pressure injuries can lead to longer hospital stays, suffering, and early death. The results suggest that more education and other interventions are needed to help staff recognize and identify pressure injuries much earlier. This project/paper can be used as a call to action for staff and facility leaders to work together on effective methods to help prevent and reduce pressure injuries. We conclude that there is a compelling need for ongoing education for nurses in LTC on PI prevention allowing for better quality of life for the patients they are dedicated to serve.

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Appendices

Appendix A: Stakeholder Approval

TRINITY ELMS

September 23, 2022

The Office of Research Integrity
The University of North Carolina at Greensboro
2714 MHRA Building, 111 Spring Garden Street,
Greensboro, NC 27412
(336) 256- 1482

To the Office of Research Integrity,

I have reviewed the DNP project proposal submitted by Joviane Marcelin, BSN, RN, and I/we agree to provide the support requested. This letter provides permission for Joviane Marcelin, a DNP student at UNCG, to conduct the DNP project that will involve Pressure Injury Prevention Education to Staff Specifically, the staff of Trinity Elms are committed to working with this DNP student to provide the current wound protocols and policies, de-identified pressure injuries data in the facility, time/support, space (as needed) for education in the facility and to allow the student to use our facility for this project.

It is my/our understanding that prior to data collection, the project proposal must first be reviewed and approved by UNCG institutional Review Board for Research Involving Human Participants, and that this support letter is required for the IRB review. It is also understood that our institution may require an IRB or research department review.

Sincerely,

Jeanne Smart RN, DON

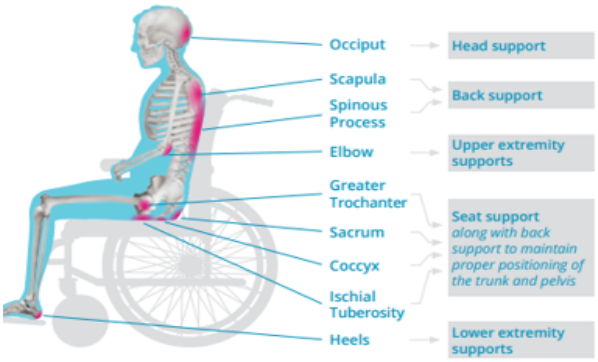
Jeanne Smart, RN, DON
7449 Fair Oaks Dr.
Clemmons, NC 27012
jsmart@trinityelms.net

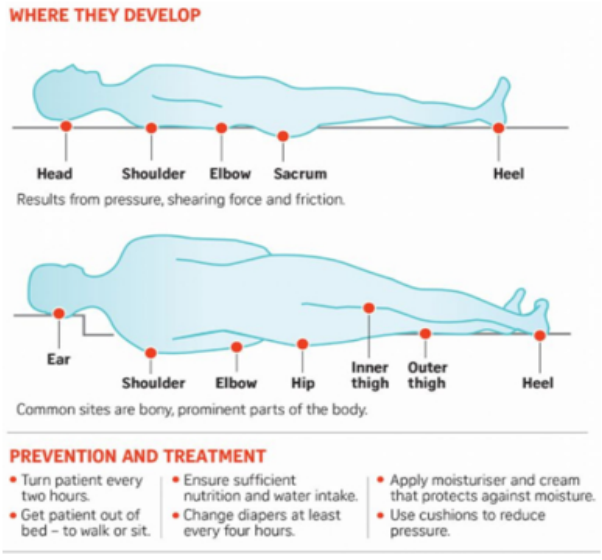
Appendix B: Staff Education Outline

Pressure ulcer/ injury prevention education

1. Purpose of presentation
2. Why pressure injury prevention is important
   a. Discuss complications of pressure injury (pain/suffering, decrease quality of life, death
3. Stages of pressure ulcers (pictures)
4. Ways to help prevent pressure ulcer/injuries
   a. Skin assessment
   b. Position changes
   c. paddings
5. What to do if you notice signs of potential skin injuries
   a. Notify charge nurse-floor nurses to notify the charge nurse. Ensure nursing staff is able to provide the detailed information required for prevention and treatment
   b. Skin team
   c. Provider
6. Questions?

Appendix C: Hot Topics Flyer





Appendix D:

Table 1

Reported Pressure Injuries Pre and Post Education

Reported Pressure Injuries Prior to Staff Education					
Gender	**Age**	**Location of Pressure Injury**	**Staging**	**Facility acquired or POA**	**Disposition**
Female	93	coccyx	DTI	Facility	Deceased
Female	82	L. lateral ankle	DTI	POA	Resident
Male	87	R. Posterior leg	UNS	Facility	Resident
Male	85	R. buttock	2	Facility	Resident
Female	91	R. heel	UNS	POA	Deceased
Female	86	L. buttock	4	Facility	Resident
Male	73	R. great toe L Knuckle L. lower medial leg L. lower medial leg (2)	UNS UNS UNS UNS	POA POA POA POA	Deceased
Male	82	L. ankle L. heel	UNS 3	POA POA	Resident
Male	91	Sacrum	2	Facility	Resident
Male	82	L. buttock L. buttock L. buttock	2 3 UNS	POA progressed 1 month	Resident
Female	76	R. plantar hand	3	Facility	Resident
Female	89	R. lateral heel R. posterior leg R. lateral ankle	UNS UNS DTI	Facility	Deceased
Female	90	Sacrum R. Posterior leg R. heel	UNS UNS UNS	POA POA POA	Deceased
Female	84	sacrum	2 3 UNS 4	Facility progressed progressed progressed	Resident
Female	89	R. heel	UNS	Facility	Resident
Male	83	R. medial foot L. heel	4 DTI UNS	Facility Facility progressed	Resident
Female	103	Coccyx/L. Buttock R. elbow	3 3	Facility Facility	Resident
Male	91	R. buttock	1	Facility	Resident
Total # of Pressure Injuries 30 **Total # of Residents with Pressure Injuries 18**					

Key:

POA- present on admission
Stg- stage
DTI- deep tissue injury
UNS- unstageable

Appendix E:

Table 2

Pressure Injuries Post Education

Reported Pressure Injuries Occurrences Post Staff Education (Nov-Jan)					
Gender	Age	Location of Pressure Injury	Staging	Facility acquired or POA	Disposition
Female	103	R. Elbow R. posterior leg	4 UNS	Facility Facility	Resident
Female	87	L. Buttock	4	Facility	Resident
Male	90	L. Buttock (Resolved) Sacrum R. Buttock R. Buttock distal (Resolved) R. Great toe R. Heel Upper back (Resolved) Central thoracic back L. lateral foot L. Distal back	3 3 3 UNS DTPI DTPI DTPI DTPI DTPI DTPI	POA POA Facility Facility Facility Facility Facility Facility Facility Facility	Deceased
Female	84	Sacrum (Resolved) L. Buttock (Resolved)	4 4	Facility Facility	Resident
Female	82	Sacrum L. Buttock (Resolved)	4 4	Facility Facility	Resident
Female	103	Sacrum midline thoracic back L. Heel	4 DTPI DTPI	Facility Facility Facility	Deceased
Male	79	R. Posterior heel (Resolved)	DTPI	POA	Resident
Male	71	Sacrum (Resolved) R. Buttock (Resolved) L. Buttock (Resolved)	3 3 3	Facility Facility Facility	Resident
Female	82	R. Buttock (Resolved)	UNS	POA	Discharged
Male	80	Sacrum	UNS	Facility	Discharged
Male	78	Sacrum	2	POA	Resident
Male	85	R. Buttock	UNS	POA	Resident
Total # of Pressure Injuries 28 **Total # of Residents with Pressure Injuries 12**					
Key: POA- present on admission Stg- stage DTI- deep tissue injury UNS- unstageable					