

Everybody Move: An Educational Quality Improvement Project for Prevention of Pressure  
Ulcers in Long-Term Care

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### Abstract

**Background:** An educational quality improvement (QI) project for a Retirement Community. In 2019, the pressure ulcer (PUs) prevalence rate was above the national and state average at the facility. A QI project on pressure ulcers prevention was conducted for the nursing staff involved in direct patient care.

**Aim:** To determine if an educational PowerPoint presentation on PU's for LTC nursing staff increased knowledge level and decreased facility's patient PUs rates.

**Methods:** A PowerPoint presentation was formulated on prevention of PU's. A 4-week assessment before and after the presentation of staff's knowledge and the resident's pressure ulcer rate was completed. The Piper's Pressure Ulcer Knowledge Test was used to test the staff's knowledge level pre and post presentation. Data analysis of pre-and post-test responses was completed for comparison to determine whether staff education increased knowledge and affected pressure ulcer rate in residents.

**Results:** The staff's knowledge level pre and post presentation data revealed a (63%) increase in the test scores. After the educational intervention, the weekly PU rates for residents revealed a statistically significant reduction by  $p$ -value = 1.9. Since the initiation of the QI project, the DNP project site national and state percentage rates reported to be lower at 1.7%.

**Recommendations and Conclusion:** The QI project successfully improved the knowledge levels in nursing staff providing direct patient care with reductions in PUs. More study is needed to investigate other factors relating to pressure ulcer incidence.

**Key Words:** PUs prevalence and treatment outcome, Pressure Injury, Skilled case mix, LTC, staff models.

### **Background and Significance**

Frail elderly patients with serious ongoing medical conditions might require LTC placement. After a cardiovascular incident such as a stroke, patients require specialized care from trained medical professionals. While in a LTC facility, there are many issues that affect LTC patient's ability to maintain adequate skin integrity such as dehydration and malnourishment. Patients with chronic health conditions such as hypertension (HTN), diabetes mellitus (DM), or peripheral vascular disease (PVD) suffer from insufficient blood flow (Murray et al., 2018). Consequently, LTC patients who have these disease processes develop PUs. As a result of the PUs, patients suffer from pain, social isolation, infection, and a decrease in the quality of life (Dowsett & von Haern, 2017). While under the care of health care providers, there are multifactorial reasons not related to disease states that may precipitate PUs in LTC patients. These can include issues of increased staff turnover, decreased staff-to-patient ratio, and alteration in nutritional status.

Around the world, PUs continues to be a health issue among LTC patients despite their avoidable nature and burden on patients, caregivers, and families (Haester et al., 2018). For the purpose of this Doctor of Nursing Practice (DNP) project, PU's are defined as an injury to part or all layers of the skin (epidermis, dermis, and subcutaneous) because of prolonged pressure on the heels, ankles, tailbone, et cetera (Lumbers, 2019). PUs are often referred to as decubitus ulcers or bedsores (Lumbers, 2019). PUs are a serious medical problem and an essential measure of the quality of care in LTC facilities (Ellaybani et al., 2021). The significance of PUs varies among geographic locations. In 2017, the prevalence of PUs worldwide was estimated to be as high as 33% (Courvoisier et al., 2018). Nationally PU incidents are being reported as high as 72.5%

(Haester et al., 2018). Comparatively, the national reported incidence of PUs in extended care homes was 58% (Wei et al., 2021). In 2021, the PI's DNP project facility had reported to a government agency that pressure ulcer prevalence rate was above the national and state average.

After reviewing prior research data, Corbett et al. (2017) reported that the average rate of PUs in community-dwelling in patients over the age of 65 was 77.1%. A study conducted in Australia suggested that approximately \$13.9 million was spent in residential community settings to treat PUs (Haester et al., 2018). In the United States, more than 17,000 deaths annually are directly related to PUs. As a result, the reduction of acquired pressure ulcers (APUs) are a high priority for healthcare organizations such as LTC. Although this may be true, PU's continue to be a challenging and costly issue for LTC's. With this diagnosis, it is estimated that the United States (US) has spent more than \$11 billion per year in treatment regimens (Padula & Delamente, 2019). Since PUs are a preventative condition, the Center for Medicaid and Medicare no longer reimburse LTC facilities for the treatment of APUs (Blenman & Marks-Maran, 2017). Per individual patient, it has been reported that the cost of treating PUs per year is approximately \$500 to \$70,000 (Blenman & Marks-Maran, 2017). Although PUs are preventative, the condition continues to be a serious adverse effect of skin breakdown. In LTC, patients suffer from altered skin integrity. As a result, patients might develop infections, cellulitis, sepsis, or death (Blenman & Marks-Maran, 2017).

### **Staffing Issues**

Long term care facilities have seen a significant decline in staffing from 2020 to 2022. A report by (Schmidt, 2022) for *Insights*, a healthcare media website compared staffing data in LCT from November 2020 to January 2022. The first assessment of data in 2020 revealed that 18% of US facilities were reporting a nursing staff shortage. The following November 2021,



22% of these same facilities were experiencing nursing shortages, and finally, in January 2022, 25% of the LTC facilities reported nursing shortages. Further, Schmidt pointed out that these shortages led to higher rates of morbidity, inadequate patient provider ratios, and increased medical errors when the staffing numbers fell below optimal levels. This is also difficult to manage for administrators alike, thereby creating a dysfunctional setting for workers and patients leading workers to leave their jobs (Schmidt, 2022). It was made clear that the staffing shortage is a significant contributor to the financial burdens sustained on the facilities and the reduced quality of patient care including higher numbers of PU's.

In like manner, data from 2020 also supports that the nursing homes in the United States (U.S.) do not have adequate staffing levels to provide high quality of care (Harrington et al., 2020). Some LTC facilities operates daily with a dangerous staffing level and is not based on the acuity of the patients, especially on the weekends (Harrington et al., 2020). The decline in the RN staffing levels were at 42%, CNAs level was 9%, and the licensed practical nurse (LPNs) were at a level of 17% (Harrington et al., 2020). In 2017 to 2018, there were 75% of LTC facilities that did not meet the staffing levels recommended by the Center for Medicare and Medicaid Services (Harrington et al., 2020). With this in mind, additional research was conducted which revealed that 56.1% of nurses are now considering leaving the nursing profession (Lee et al., 2017). As a result, improving staffing issues and increasing pressure ulcer education is an essential issue for ensuring the safety of patients in LTC and lower the rate of PUs.

The aforementioned analysis led to the following conclusion, cost-effective strategies to help reduce the incidence of PUs are important for LTC facilities, such as hiring and supporting more qualified nurses and certified nursing assistants (CNAs) despite the staff shortage. These

essential workers are the main front-line caregivers for LTC patients. Most of the time, they are the first to notice a change in a patient's skin integrity. Their documentation and communication about potential pressure ulcers in a patient's plan of care are essential (Bristow, 2020).

Additionally, LTC facilities that employ a larger number of nurses and CNAs increase the likelihood of a patient being turned and repositioned frequently (at least every two hours) to prevent skin breakdown. In LTC, the patient's family expect that the patient will receive high-quality of care that skilled and committed nurses and CNAs can deliver (Travers et al., 2021).

Another key point is that LTC facilities are required to provide adequate and competent health care staff. Unfortunately, the staffing to patient ratio is inappropriate for what is sufficient to prevent undue harm to patients. Despite skin care protocols which include, turning and repositioning and applying pressure off loading devices, sacral PUs continues to be a significant concern in acute care settings and LTC due to staffing levels (Lavalley et al., 2019). PUs can lead to increased pain, infection, and even death for patients (Zaidi & Sharma, 2022). Given that, many LTC facilities have CNAs and nurses caring for more than 24 patients on a shift, this contributes to the lack of safe inpatient care (Harrington et al., 2020). Prevention of PUs is labor-intensive, and inadequate staff-to-patient ratios create challenges when the patients require incontinent care, turning, and repositioning every two hours.

The PI worked in many facilities that reduced staff to reduce operational costs, and the reduction in staff adversely affected patient care. Due to inadequate staffing and altered nutritional status, patients can develop PUs because they are left in the same position that puts pressure on a bony prominence for an extended time (Harrington et al., 2020). In LTC, most state staffing requirements are below the standard (Harrington et al., 2020). Currently, the minimal staffing requirements for LTC are 1:6 for CNA to patient and 1:40 for a licensed nurse to patient

on day shift, 1:9 for CNA to patient and 1:40 for licensed nurse to patient on evening shift, and 1:14 for CNA and 1:80 for licensed nurse to patient on the night shift (Harrington et al., 2020). An adequate staff-to-patient ratio will prevent staff from being burnt out, overworked, and facilitate awareness of the danger of leaving LTC patients in the same position for a lengthy period.

### **Education**

Given the future aim to improve patient outcomes and cost savings, LTC organizations continually seek to improve methods for preventing PUs. As bedside caregivers for LTC patients, the support from healthcare workers is essential in the prevention of PUs. To help prevent PUs, the LTC nursing staff should possess the necessary competencies from continuing education on PU prevention (Seo & Roh, 2020). On this basis, the PI concluded that education is needed for healthcare workers working in LTC to reduce the rate of PUs (Seo & Roh, 2020). An educational in-service has proven to be effective in providing the staff with scientific evidence about the benefits of turning and repositioning patients every 2 hours and proper skin care regimen to prevent PUs (Yap et al., 2019).

In research completed by Neziraj et al., 2021, a focus study completed with nurses, nurse aids and managers in LTC in southern Sweden, found that a smoother organizational strategy could promote PUs prevention. An important challenge was noted that there are various levels of education found among staff who work in LTC's, especially among CNA's. The researchers recommended a "tailored educational intervention aimed at increasing the related knowledge among those working in nursing homes to enhance preventative work" (Neziraj et al., 2021 p. 9).

Moreover, to bridge the gap between the lack of PUs education and the rates of PUs, healthcare professionals in LTC need high-quality education to increase their knowledge about

the basic principles of preventing PUs (MacDonald, 2017). The education provided to the LTC staff should be related to patients' real-life issues in treating and preventing PUs and alleviating pain and suffering in the patient population that resides in LTC (MacDonald, 2017).

### **Quality of Life**

As people age or become disabled, they and their families must make tough decisions. One decision of great concern has been to continue to care for older individuals in their homes or have them placed in 24-hour long-term care (LTC) facility. If the decision was made to put a loved one in LTC, it was expected that they would receive the best possible care. In addition, it was expected that the patient's health and safety will be the top priority of every staff member that works in LTC. Unfortunately, the health-related quality of life for LTC patients is often reduced due to patients developing PUs as their health and mobility decline. When the health, independence, and mobility of patients deteriorate, they spend an increased amount of time in bed because they become dependent on staff members in LTC to provide incontinent care, activities of daily living (ADLs), feeding, turning, and repositioning (Jual et al., 2018). Regrettably, patients can be left in bed lying on one side for an extremely long time. As a result, they develop PUs over areas of bony prominence such as hip, coccyx/sacral, heels of the feet, back, elbow, or shoulder ranging from surface pressure areas to substantial deep tissue damage (Wei et al., 2021). In LTC, pressure ulcer prevention continues to be a challenge and causes the most significant harm to patients (Wei et al., 2021).

PU's are a burden to patients in LTC and cause significant pain for them. Often, a patient's pain goes unrecognized by health care staff, especially if the patient cannot communicate. Another effect of PUs is that it contributes to sleep deprivation in those affected by them (Sharp et al., 2019). When patients experience pain, it alters their ability to sleep

(Rutherford et al., 2018). Frequently, in frail elderly patients, pain is the first indicator of early disruption of tissue integrity (Todd, 2021). Pain directly influences the patient's quality of life psychologically, socially, and emotionally well-being (Rutherford et al., 2018). PUs contributed to a decline in the patient's physical functioning because the pain makes patients want to restrict movement and not participate in activities of daily living.

In addition, PUs psychologically, socially, physically affects the quality of a patient's life (Wei et al., 2021). An untoward effect of PU's is that they usually have exudate and have a foul odor. Patients that can maneuver around in a wheelchair are reluctant and embarrassed to be around other patients thus decreasing socialization (Rutherford et al., 2018). Therefore, the risk of social isolation increases. The exudate and odor cause the dressing on the wound to be changed more frequently, further contributing to the patient's burden of pain (Rutherford et al., 2018). Patients with PUs experience emotional distress such as depression, anger, or irritation (Rutherford et al., 2018). In addition, the risk for infection has been a concern after a patient develops PUs that the patient and their family express.

### **Legality**

Knowing PUs are avoidable, LTC facilities can face legal consequences for breaching duties to prevent and treat PUs (Kathirvel et al., 2021). Federal regulations such as the Omnibus Budget and Reconciliation Act (OBRA), also called the Nursing Home Reform Act, require that LTC facilities prevent PUs in patients that were admitted without PUs (Harrington, 2020). Unless there is clinical documentation of the patient's medical condition that places the patient in a higher PUs risk category, PUs are considered unavoidable (Carlsson & Gunningberg, 2017).

Health care providers owe a duty of care to every patient in LTC; if that duty of care is breached and the patient suffered an injury, the LTC facility can legally be held responsible. In

healthcare, a duty of care is a legal obligation that requires facilities and staff to adhere to reasonable care and prevent foreseeable harm to patients (Harrington, 2020). Often, the staff in LTC mistakenly think that LTC patients are disabled. As a result of this inaccurate mindset, the duty of the staff to provide care to these patients can diminish, leading to undesired outcomes such as PU's.

LTC providers can legally be held accountable for abuse, neglect, and inadequate care. Federal regulations require that patients in LTC receive quality care that will help them achieve and maintain their highest physical, mental, and psychosocial well-being (Harbishettar et al., 2021). In an effort to improve nursing care of PUs, the primary investigator (PI) would like to conduct an educational in-service for the staff that are working in LTC to facilitate an increase of knowledge on PUs prevention for high-risk patients. This nurse-driven educational training can promote improved nursing care for high-risk patients for PUs at the local LTC facilities.

In preparation for this project, the PI observed the staff over several days on multiple shifts. This included the LTC on the skilled nursing unit for a total observation time of 32 hours for the first, second and third shifts. During the observation days, the PI shadowed staff members and watched hands on patient care to determine how skin integrity was maintained. The PI observed the nurses to see how often a skin assessment was conducted, and if the CNAs paid any attention or alerted the nurses about potential problematic skin areas while providing care to the patients. During those observation days, the PI determined that the amount of time the staff provided care, specifically turning and repositioning and skin assessment was found to be minimal. The PI found that the staff spent less than one hour turning and repositioning patients. Further, pressure on bony prominence were not offloaded in the bed or once the patients were up in wheelchairs or bedside chairs. These inadequacies increase the risk of PUs for LTC patients.

Therefore, education for LTCF (long-term care facility) clinical staff and those who care for the LTC patients is imperative to reduce the number of PUs incidences.

### **Purpose**

The purpose of this DNP project was to improve the delivery of care to patients residing in LTC and reduce the PUs incidents in LTC patients by improving pressure ulcer education concerning baseline staff knowledge. With the aim of concurrent investigation of staffing issues, and patient ratios and by examining the effects of nurse's behaviors, attitudes, educational needs, and staffing mix, as it impacts the prevention of preventing PUs in long-term care. The two objectives of the QI project were to increase the staff's PUs knowledge level to prevent PUs and determine if the incidence of PUs decreases after the educational training.

### **Outcome Measures**

The QI project outcome data was focused on the incidences of PU's for the patients at the LTC DNP project site. Patients for this DNP project who required skilled nursing care were over 65 years of age. This patient population had several chronic diseases that put them at a greater risk for skin breakdown. For this QI DNP project, the PI presented an educational training about PUs for the staff working at the QI DNP project site. The PI was provided with aggregate data on the number of PUs in these patients by the DON/Assistant Director of Nursing (ADON) before and after implementing the educational session for the quality improvement project with the aim of a reduction in PU's post educational session. The aggregate data was de-identified to protect the privacy of the residents.

## **Review of Current Evidence**

### **Methodology**

The primary investigator (PI) reviewed and searched for articles that centered on search terms such as PUs, pressure injury, patient adverse outcomes, LTC staff-to-patient ratio, and how education could reduce the incidence of PUs. First, the PI used a search strategy to find full-texted peer-reviewed articles and studies in multiple electronic databases. Initially, the PI used CINAHL, Embase, and PubMed search engines to generate articles from 2017 to 2021. The specified dates ensured that the PI search was focused and included current evidence-based (EB) articles. In LTC, there was inconsistent evidence about nurses' educational needs, adequate staffing matrix, and turning and repositioning every two hours to prevent PUs.

The PI used keywords from statements such as nursing staffing models, PUs, the prevalence of PUs in long term care patients, nurses, attitudes, behaviors, clinical assessment, outcome assessment, policies on preventing PUs, skill mix, knowledge, nursing home, team-based learning, nursing outcomes, PUs treatment outcome, and computer-based learning.

### **Evidence criteria**

After narrowing the most relevant articles pertaining to the topic of interest, first, the PI read the author's credentials to ascertain whether their knowledge base supported their understanding of PUs. Secondly, the PI wanted to ascertain whether their scholarship positively contributed to improving knowledge on the subject. Finally, the PI paid close attention to the author's credentials to determine if they were employed in reputable universities or medical facilities to determine if the information written within the article could be reliable and to ascertain the rigor of the studies.



### **Literature Review Results**

There was an abundant number of articles published on improving the staff matrix, utilizing registered nurses (RNs) as change agents, and increasing the education of LTC nurses on PUs in the elderly patient population. The chosen articles highlighted information about nurses working in LTC, training or education interventions of LTC nursing staff to prevent PUs, and how the impact of LTC staff reduction increased the incidence of PUs.

### **Increasing Pressure Ulcer Education**

The rate of pressures ulcers is still increasing in LTC patients. A study conducted by Seo & Roh (2020) examined the effectiveness of team-based/learner-centered educational programs based on adult learning principles in reducing PUs. The researchers focused on the most effective and beneficial education modality in changing staff's attitudes and increasing the knowledge about preventing PUs in nurses who worked in LTC (Seo & Roh, 2020). The researchers recommended that educational material should be evidence-based and geared toward the attitudes, concerns, and barriers of staff working in LTC to better facilitate PUs prevention (Guzman et al., 2018). A theoretical, qualitative study approach by Lopez et al. (2017) centered on how training nurses can prevent PUs in long-term care (Seo & Roh, 2020). The study results identified that elderly patients in long-term care who are immobile or bedridden are at substantial risk for developing PUs (Seo & Roh, 2020). The nurses who care for elderly patients required more education to prevent PUs. It was also recommended that the nurses are to have a positive attitude and present behaviors conducive to patients' safety in the prevention of PUs (Seo & Roh, 2020).

Traditionally, nurses have had to attend lectures in person in-services to facilitate learning about PUs (Seo & Roh, 2020). After Seo & Roh (2020) facilitated the educational in-

service, a pre and post-test examination was utilized (Seo & Roh, 2020). The authors revealed that the Korean version of the Attitude toward Pressure Ulcer Prevention Instrument (APuP) tool, which assessed LTC nurses' attitudes, knowledge, and behaviors toward pressure ulcer prevention, had shown improvement in these areas after education (Seo & Roh, 2020). The APuP consisted of 13 different items such as "personal competency to preventing PUs, the priority of preventing PUs, the impact of PUs, responsibility for preventing PUs, and the nurse's confidence in effectively preventing PUs " (Seo & Roh, 2020, p. 3). The pretest and post-test scores revealed an increase in knowledge, behaviors, and attitudes for preventing PUs. After the educational presentation, there was a significant improvement in the test scores. However, the authors recommended further studies "to verify the incidents of PUs and nurses' performance on preventing them" (Seo & Roh, 2020, p. 6).

Unfortunately, there are a paucity of studies done solely in LTC that suggest improving education can prevent PUs (Stolt et al., 2019). Research on pressure ulcer prevention suggests that LTC facilities with ongoing staff development and protocols were likely to have the lowest PUs rates (Stolt et al., 2019). Conversely, there was an ongoing debate among researchers about the effectiveness of evidence-based education and the prevention of PUs. Avsar & Karada (2018) explained that despite the utilization of EB studies, PUs continued to be a significant issue.

Despite the inconsistencies in the effectiveness of education, all frontline staff should be involved in any PUs prevention methods by management, which will facilitate staff engagement (Stolt et al., 2019). For the same reason, Pagan & Harvey (2019) suggested that due to constraints on time in LTC, short-paced education models are more effective in reducing PUs. Nationally, the aging population is increasing in LTC, and sufficient evidence-based interventions need to be utilized to minimize PU's and contain the cost of treating existing PUs

(Stolt et al., 2019). Stolt et al. (2019) revealed that there are evidenced based PUs prevention guidelines published internationally. These guidelines are issued by the National Pressure Ulcer Advisory Panel (NPUAP) in the United States (US), European Pressure Ulcer Advisory Panel (EPUAP), and the Pan Pacific Pressure Injury Alliance (Stolt et al., 2019). Although there are national guidelines, in LTC, evidence was still lacking about nursing's clinical practice and knowledge on preventing PUs. Therefore, further nursing education and training in LTC was needed to augment prevention strategies.

A systematic review was conducted using a Meta-Analysis of Statistics Assessment and Review Instrument (MAStARI) (JBI, 2014), a critical appraisal checklist by the Joanna Briggs Institute (Stolt et al., 2019). The population of patients included in this study were suffering from PUs (Stolt et al., 2019). Stolt et al. (2019) suggested that several interventions such as pressure reduction mattresses, cushions, and nutritional support were to be utilized to prevent PU. It was noted, however, that education about PUs was the most often used intervention (Stolt et al., 2019). Data obtained in LTC, by De Los Santos (2021) suggested that the origin for the rise in PUs was the lack of a nursing education. A logic model was utilized by the researchers to conduct an evidence-based project that provided an educational strategy to LTC staff in an effort to reduce the incidence of PU's in the patients (De Los Santos, 2021). During, before, and after the educational sessions, the LTC staff was required to complete a test to determine their past and current knowledge about the prevention of PUs (De Los Santos, 2021). The examination revealed promising results that educating LTC staff reduces PU's and yielded more than a 50% increase in staff knowledge (De Los Santos, 2021).

**Improving patient outcome**

In 2005, McCloskey and Diers conducted a quantitative systemic review to examine the association between the nurse-to-patient ratio and patient outcomes (Twigg et al., 2019). There were two reviewers within the study that used The Joanna Brigg Institute for Systematic Reviews (JBI, 2014) to critically appraise 95 health care records of LTC facility patients (Twigg et al., 2019). The researchers found that when the skill mix was changed causing an increase in the nurse-to-patient ratio, the LTC elderly population of patients suffered (Twigg et al., 2019). In LTC, the immobile and incontinent patients were at a greater risk for developing PUs. Therefore, research proved that an increased skill mix, defined as the total number of hours a RN provides were associated with altered patient comes (Twigg et al., 2019). The relationship between decreased nursing staff and patient outcomes resulted in increased mortality rates, PUs, urinary tract infections, wound and nosocomial infections for LTC patients (Twigg et al., 2019). It is imperative that LTC, policymakers and managers should refer to this research article to develop policies related to staffing issues (Twigg, 2019). In LTC, the staffing levels are affected by what the administrator believed was reasonable and within the budget. Budgetary restrictions directly influence the change in the number of nurses on duty and the quality of care provided to the patients.

Moreover, in their study, the researchers used of Systematic Review guidelines (JBI, 2014) from the Joanna Briggs Institute (JBI, 2014), revealed that there was a greater than 75% inverse association to an increased skill mix and patients developing PUs (Twigg et al., 2019). As a result of the high skill mix and low staffing levels, the researchers found that the nurses could not appropriately execute skin assessments or interventions to recognize and prevent skin alteration or adverse events in immobile patients (Twigg et al., 2019). The literature is currently

evolving about how nursing staff affects patient safety because a "consensus on the definition of skill mix is required" but had not been made (Twigg et al., 2019, p. 3419). However, those making staffing decisions cannot ignore systematic reviews' association, suggesting that critical patient outcomes such as PUs can be improved with an improved skill mix (Twigg et al., 2019).

In Barcelona, a significant study using a qualitative approach were utilized in 2021 by Hernandez-Martinez-Esparza et al., who examined the prevalence of PUs in nursing home patients. In the cross-sectional study of 8296 patients over the age of 65 (Hernandez-Martinez-Esparza et al., 2021) these researchers revealed that PUs in LTC patients had not been appropriately studied. The researchers discovered that the prevalence of PUs for patients was higher in smaller nursing homes compared to the larger nursing homes (Hernandez-Martinez-Esparza et al., 2021). The data was collected by residential care teams trained to conduct chart reviews. In addition, the specialized care teams gathered data about patients' wounds during one of their scheduled visits. They collected data about the patient's body mass index, serum albumin level, ankle-brachial pressure index, and the type and stage of the wound(s) (Hernandez-Martinez-Esparza et al., 2021). According to Hernandez-Martinez-Esparza (2021), 362 patients had wounds. As a result of this study quality improvement activities were initiated in LTC. The authors also recommended that this study be repeated to see if any new strategies/quality improvement activities made a difference in the prevalence and incidence of PUs in LTC (Hernandez-Martinez-Esparza et al., 2021). Although PUs are a health problem for nursing home patients, the authors concluded that more studies are needed to confirm the association (Hernandez-Martinez-Esparza et al., 2021). Choe et al. (2018) interviewed 17 RNs that had past working experience in LTC using a snowball sampling that revealed that there were ethical issues that contributed to the inability of the staff to provide adequate patient care. In LTC, the

most common ethical dilemma that the nursing staff reported was moral distress due to the lack of resources and time needed to provide adequate care to the patients (Midtbust et al., 2022). In addition, the study suggested that due to ethical issues, educating staff and improving staffing may not improve the quality of patient care (Choe et al., 2018).

### **Baccalaureate-educated registered nurses (BSNs)**

BSNs are considered role models and agents of change (Backhaus et al., 2017). However, in a cross-sectional study that measured problems such as PUs and falls, BSNs had minimal contact with patients. Backhaus et al. (2017) suggested that in LTC facilities in the US, there was no clear understanding of the relationship between BSNs and patient care outcomes. Conversely, evidence suggested that BSNs lead to a higher quality of care (Backhaus et al., 2017). The study was conducted in 95 Dutch LTC facilities (Backhaus et al., 2017). The authors included 6145 patients on 282 nursing wards in LTC (Backhaus et al., 2017). This large study included characteristics such as the size of the ward, age of the patients, care level, co-morbidities, and wards were averaging approximately 5 minutes per day delivering care to the patients (Backhaus et al., 2017). The study found that on the somatic ward, the ratio of a patient falling, and the administering antipsychotic medication was higher on wards with BSNs compared to lower rates of patients that had an indwelling catheter (Backhaus et al., 2017).

On the contrary, it was noted that when BSNs worked on the psychogeriatric ward, the adverse medication incidents were lower (Backhaus et al., 2017). Interestingly, the researchers did not find a difference in the occurrence of PUs on either ward. The researchers concluded that the time spent per patient from BSNs was low, but the quality of care was acceptable. However, the researchers found no causal relationship between the quality of care and the presence of BSNs (Backhaus et al., 2017). Backhaus et al. (2017) suggested that future studies should

distinguish between one on the "mediating and moderating role of staffing-related work process and a ward environment as it relates to the quality of care" (Backhaus et al., 2017, p. 7).

In like manner, Boscart et al. (2018) conducted a cross-sectional study that examined the characteristics of staff working in LTC compared to the patient's quality of care indicators. The researchers gathered data from the administrative records and patient assessment forms (Boscart et al., 2018). The study included a total of 69 registered nurses (RNs), 183 LPNs, 858 CNAs, and 2173 patients. The authors utilized a quality-of-care multilevel regression model composite ranking score for the risk-adjusted quality indicators (Boscart et al., 2018). The quality-of-care composite ranking score was created by the researchers to individually describe the LTC practice sensitive risk indicators (Boscart et al., 2018). The ranking score was expressed in a multilevel regression model that determined the association of staff characteristics and quality of care (Boscart et al., 2018). The findings showed that the CNAs' direct care hours for the patients were equal to 76.5% of their time at work, and associated with a higher quality of care, especially if the CNAs had several years of experience. On the other hand, the researchers found lower results from RNs and LPNs because they did not have direct patient contact (Boscart et al., 2018). The authors concluded that care delivered by CNAs was critical in LTC facilities. Therefore, the authors suggested that the LTC hiring manager should utilize these findings to understand, retain and optimize the role of the CNAs (Boscart et al., 2018). Pagan & Harvey (2019) suggested LTC leadership needed to develop champion roles in preventing PUs for CNAs because they were equally crucial as RNs in overall patient care.

### **Conceptual Framework**

The PI's choice for the conceptual framework for the DNP project was based on previous employment experience in LTC and determined that a patient's quality of life was hindered due

to the burden of PUs. In light of this, the PI aimed to develop a quality improvement project that helped LTC staff bridge the gap of PUs development in patients and the deficit in awareness of prevention methods by increasing the staff's knowledge level about PUs prevention.

Stakeholders at the DNP project site informed the PI that due to patient complexity and high staff turnover; PU rates were increasing at the site. Incidences of PIs was found to be a multidisciplinary problem that required everyone's collaboration to address the complex issue by implementing social and organizational change (Wojciechowski et al., 2016).

As a result of this information, Lewin's Change Theory (1947) was deemed appropriate in the guidance of this quality improvement project. A German social psychologist named Kurt Lewin (Britannica, 2021) believed that organizational change began by understanding why individuals, groups, and organizations act as they do (Burnes, 2004). Moreover, Lewin suggested that not only the actions of people needed to be understood, but there also needed to be an understanding of what could be altered to facilitate change (Burnes, 2004). In order to prevent PUs, educating the staff in LTC was required to provide transparency and accountability for their actions. Organizational change usually begins with the readiness for change. Additionally, the enthusiasm for change was noted to be multileveled within the shared organization's ability to address an issue by implementing a change and evaluating its impact. Therefore, in the transition to a successful implementation of an organizational quality improvement project, the stakeholders, including the administrator and DON, were encouraged to acknowledge the need for and agree to organizational changes. This acknowledgement led to the first step in Lewin's three-stage model of change.

The first step in Lewin's theory is *unfreezing* the existing mindset of nurses who may believe that CNAs are the only people that can or are allowed to transfer patients or are involved



in turning and repositioning patients. From this PI's past experiences, RNs and LPNs did not participate in turning and repositioning patients. As a result, this existing mindset contributed to a decline in the quality of care for patients. Stakeholders saw the discrepancy between the current facility practice and the negative performance rating, such as low patient satisfaction scores reported by regulatory agencies.

Lewin's second step for organizational change is *moving*. This stage was intended to begin the driving force toward behavior change or to slow the resisting forces that encourage the staff to hold on to the status quo. The stakeholders at the facility agreed to the development and implementation of this DNP project entitled *Everybody Move: An Educational Quality Improvement Project for the Prevention of Pressure Ulcers in Long-Term Care*. During the initiation phase, stakeholders and employees was educated on how they can help in preventing PUs regardless of their assignment.

As part of this intervention and implementation phase of the project through education, stakeholders began to understand how the redesigning of roles and relationships of every nursing staff member will reduce PU's. Every employee that was directly involved with patient care was trained and provided the skills needed to assist the CNAs with transferring, turning, and repositioning patients to bridge the gap of staffing issues and pressure ulcer prevention.

Finally, the *refreezing phase* occurred after implementing the quality improvement project. At that point, the organization eliminated the status quo of specified departmental job duties to organizational job responsibilities. As a result, stakeholders realigned the future vision of the organization's policies and practices. These new practices have been reinforced to cement the changes in the behavior of the nurses to make this the new normal. A change in efficiency was demonstrated by the employee's ability to understand the risk and rate of patients developing

PU's. It was postulated that employees will be more confident in their abilities and commitment to bridge the gap of PU's prevention knowledge deficit and reduce the rate of PU's within the organization.

## **Methods**

### **Design**

This DNP project was a quality improvement project to improve the surveillance and prevention of PU's. Regulatory agencies determine patients' quality of care by mandatory reporting of quality measure data. In LTC, PU's are a reported quality measure. It was recognized by the PI that most nursing and ancillary staff did not realize what PU's are, what causes PU's, how to identify high-risk patients and, most importantly, what the individual contribution each staff member plays in preventing and reducing PU's. Therefore, the PI delivered a QI project in LTC that aimed to improve the delivery of care for LTC patients by improving pressure ulcer education concerning baseline staff knowledge, staffing issues, and patient ratios. Additionally, an examination of the effects of nurse's behaviors, attitudes, educational needs, and staffing mix, as it impacts the prevention of preventing PU's was completed.

### ***Translational Framework***

The PI used the Plan-Do-Study-Act (PDSA) EB translation model of 1993 to conduct the DNP project. The PI gained the W. Edwards Deming Institute permission to utilize the PDSA model (Appendix A). The PDSA model was a systematic way to initiate a quality improvement project that facilitates learning and knowledge. The PDSA model fit into the DNP quality improvement project because the PI implemented a planned educational training for the staff in the identification and prevention of PU's; with the intention that the education was successful in

helping the LTC staff reduce PU's. If the data revealed a reduction in the PU's, the educational PowerPoint can be adopted by the organization for continued use and ongoing training of staff.

The first step of the PDSA model (Appendix B) is the *Plan* in which the project's purpose has been identified. The *Do* phase addressed staff education by implementation of the PI's project. The PI presented a PowerPoint presentation incorporating EB practice guidelines discovered from regulatory agencies and research. The *Study* phase evaluated whether the PUs rate decreased or increased after educating the LTC staff. Finally, the *Act* phase allowed the PI to continue monitoring the staff's educational needs and identify areas that need to be improved or changed to further reduce PUs.

### ***Population***

For this DNP project, the PI provided education about PUs for the nursing staff working at the DNP project site. At the time period that the DNP project was undertaken, there were 67 in total number nursing staff that were employed on various shifts. When presenting the PowerPoint presentation (Appendix C), any health care professionals and families was welcome to attend. The inclusion criteria for the project were patient's family members, RNs, LPNs, and CNAs who understood English, work on the skilled nursing unit at the DNP project site and provide direct care for skilled nursing facility (SNF) patients with and without PUs. There were approximately 30 eligible staff participants. The exclusion criteria were nurses who do are not directly involved in patient care in LTC or other staff members such as the administrators, kitchen staff, non-family members, and or anyone who was not providing direct patient care or was not employed by the DNP project site facility.

### *Setting*

The DNP project was conducted at a retirement community located in Central, North Carolina. The facility provides various care such as memory, independent, assisted living, rehabilitation, and skilled. The patients who resided there were those who required skilled nursing care and could not independently give or perform their own activities of daily living (ADLs). The PI obtained the total number of patients with PU's from the DON and the wound care nurse prior to beginning the project. The DON reported that there were several patients with PUs which affected the outcome of their health status (H. Ward, personal communication, September 2021). The facility is a large not-for-profit organization. The number of beds that serve patients requiring assistance with care is reasonably small. There are 38 certified long-term rehabilitation beds and 28 LTC beds. At the time of the DNP project, approximately 7 out of 100 patients at the facility had PUs that were adversely affecting their health.

### **Project Implementation**

The PI met with the administrator, DON, and ADON at the project facility to discuss the QI project. They welcomed the DNP project and approved the initiation of the project and provided the PI with a letter of permission to use their site (Appendix D). The administrator informed the PI that she was the Quality Improvement Chair for the facility. In addition, the PI met with the Wound Care Consultant for the facility and gained approval from her to conduct the DNP QI project. At the PI's DNP project site, the staff are required to attend monthly training sessions that are provided by the DON, ADON, and/or the nurse educator/staff development person. To take advantage of the planned meetings that had already been set, the QI project educational session was incorporated as part of the mandatory training session that RNs, LPNs, and CNAs staff are already required to attend to bridge the knowledge gap in PUs prevention.

During the implementation phase, the PI worked with the ADON to obtain de-identified aggregated data from the Material Data Sheet (MDS) daily report for accuracy of the number of PUs, including their location and stage. The duration of the study was approximately two months from August 2022 to September 2022. The presentation was conducted in person twice over one week. This was planned so that every staff member had a chance to attend at least one of the training sessions for at least 30 minutes at the designated location provided by the DON/ADON. The in-person PUs PowerPoint presentation was not hindered by COVID-19 pandemic.

Together with the in-person training, a hard copy of the educational PowerPoint presentation was placed at each nursing station so that it was referenced or viewed by the nursing staff who were unable to attend the training. The PowerPoint presentation was provided for all RNs, LPNs, and CNAs on all shifts and was a part of the other training given at the facility. The presentation defined PUs, described the stages of PUs, described patients at risk for developing PUs, and how to prevent PUs. The PI asked that the DON/ADON put up flyers (Appendix E) to notify the staff of the training around the facility especially at the time clock and in the break room. The DON/ADON included it in the agenda for the staff meetings one week before the initiation of the educational session. Qualtrics was utilized to distribute *The Pieper Pressure Ulcer Knowledge Test* (AHRQ, 2017) (Appendix F) one week prior to and immediately after the educational training. The expected percentage of staff that was expected to receive the education was 100%.

Moreover, the LTC staff were notified of the education by facility email. The staff emails were password protected; therefore, the PI did not have access to the staff's email addresses in order to provide them with the educational material. Instead, the PI sent the PUs prevention

PowerPoint presentation invitation to the DON to forward to the nursing staff (Appendix G). The DON agreed to send out the emails to the staff explaining the DNP project and the importance of participating in learning about pressure ulcer prevention. The PI provided breakfast or lunch for two of the educational sessions. The PI paid for the food and drinks out of personal finances, as there was no funding requested or received for the project. The PI spent approximately \$100 in total on food and drinks. There were no monetary incentives provided to entice the staff to participate in the project.

### ***IRB Approval***

Prior to starting the QI project, the PI submitted a request for approval to complete the DNP project at the site to UNCG's Office of Research Integrity for institutional Review Board (IRB). The project was approved as EXCEMPT. The project site did not have an IRB approval process. However, the DON, ADON and administrator reviewed the project proposal and supported the request to complete the DNP QI project at the facility.

### ***Instrument and Data Collection***

The PI obtained a list of 72 "true", "false", or "I don't know" responses to the questions used for the pretest. The pre-test was given to participants two weeks prior to conducting a PowerPoint presentation. The instrument chosen for data collection for the project is titled *The Pieper Pressure Ulcer Knowledge Test* (AHRQ, 2017). This tool was obtained from the Agency for Healthcare Research and Quality (AHRQ), a public government website (AHRQ, 2017) therefore, permission was not required from the agency to utilize this questionnaire. It was explained in an email that participation in completion of the questionnaire was voluntary. The participant's response to the first question implied consent. After the PowerPoint presentation, the staff had one week to complete the same knowledge test for the post test.

The test was distributed through Qualtrics, a 1-lock secure program through UNCG. The test was given before and after the PowerPoint presentation. Qualtrics tests responses were anonymous and did not have any identifying information from the participants who chose to take the pre and post-test. Immediately after the training, a Qualtrics link for the posttest was sent to the DON. She, in turn, sent the link out to the staff via their secure email portal. A post-test was administered using the same questionnaire as the pre-test. The staff only had access to the post-test Qualtrics link for one week. Both the pre and post test questions were expected to be completed by participants in approximately 10-15 minutes. When completing the test, the employees were required to submit some basic demographic information such as their mother's favor color and date of birth, their job title, and shift worked so that the pre and post-test could be correlated. In addition, the PI printed the pre and post-test and placed them at the nursing station. The PI asked the DON/ADON to place a secured box at the entrance of the DON office so that the anonymously printed tests could be returned.

The PI formulated an Excel document to record, compare and analyze the knowledge test results before and after the training. The Excel spreadsheet for data collection contained a unique IDs for each test such as sex, age, assigned work shift, and job title. The aggregate patient data on PU rates was provided by the DON/ADON one month prior and one month after the PI conducted the educational session for the staff. The PU's descriptive data such as the stage, location, number of patients with PUs was de-identified and collected by the DON for 3 weeks pre and post educational intervention. The PU rate spreadsheet did not have any patient identifying information but specifically included the stage of each PU. The Excel spreadsheet included three questions with categories to record whether the knowledge level of the nursing staff increased, decreased, or stayed the same (Table 3; Appendix H) Additionally, the incidence

rate of pressure ulcers at the project site was examined pre and post the educational session to determine whether the QI project facilitated a reduction in the PUs rate at the facility.

### **Data Analysis**

The PI met with the UNCG statistician and was assured that there were enough participants to analyze data using a paired two-tail *t*-test analysis. A null hypothesis was formulated to determine if there would be a difference in the staff knowledge level after the educational PowerPoint presentation. The alternative hypothesis was that there was no difference in the staff knowledge level after the educational PUs prevention PowerPoint presentation. . . . Based on this analysis a determination of whether there was a decrease, increase, or no change in the retention of learned information was calculated.

## **Results**

### **Demographics and Test Scores**

The PI's DNP project was implemented on August 19-20, 2022. There was a total of 17 participants out of a total of sixty-seven anticipated participants, calculated at a 25% response rate. The participants had three weeks before and after the presentation to complete and respond anonymously to the pre and post-test. There were nine CNAs, four LPNs, and four RNs that completed the survey. Among the participants were five participants that had an undergraduate degree, three had a two-year associate degree, and nine had a certificate. Each of the participant's responses were graded according to the *Pieper Pressure Ulcer Knowledge Test* answer key (Appendix I). The participant's baseline knowledge level scores prior to the PU's presentation averaged 59%. Comparatively, the average knowledge level test scores post PUs presentation increased to 93% (See Table 1; Appendix J). Further, the PU rate at the DNP project site was



reported by the DON as a weekly average of 7-8. Since educational intervention, the DON has reported a weekly average of 6 PU's which is a reduction of 2% for these incidences.

### **Evaluation of Outcomes**

The participants pre-test scores were much lower ( $M = 59, SD = 8.04$ ) compared to the post-test ( $M = 93, SD = 8.33$ ). The paired  $t$ -test revealed that the  $p = 1.97915 \times 10^{-10}$  (Table 2; Appendix K). At  $\alpha = 0.05$  the  $p$ -value was greater than  $\alpha$ , so the PI failed to reject the null hypothesis. This indicated a statistical significance in the difference between the average test scores over-time for the participants (Figure 2; Appendix 1). Further, the prevalence of the PUs rates was shown to decrease, although not significantly, for the limited time period of data analysis. The PUs rate at the DNP project site was reported by the DON as a weekly average of 7-8. Since implementation, the DON has reported a reduction in PUs by 2%. The data revealed that the educational PUs prevention PowerPoint educational intervention played a positive role by increased staff knowledge on prevention of PU's and the reduction in the incidence of PU's at the project site. The QI project revealed a significant increase in the LTC staff knowledge level on prevention of PUs. At the PI's DNP project site, the percentage of the high-risk patients with PUs are reported to be 1.7% which is lower than the state rate at 10.1% and national rate at 8.1% (Medicare.gov, 2022).

### **Barriers to Success**

Participants' small response rates were identified as one of the barriers to success in this QI project. As a result of staffing issues, very few people were free to attend the PowerPoint presentation. Also, a contributing factor in participation was that several staff members were absent from work due to the SARS-Cov2/COVID-19 virus. The QI project was limited to one

facility, which could have impacted the number of participants and the data results. Therefore, generalization of data cannot be made for all LTC's.

Another limitation for this DNP project involves the lack of a proper venue and projector equipment to allow the PI to provide the educational intervention which also influenced the impact of presentation. The PI was given in a small sitting area located behind the nursing station. The PI understood that the change in location also affected participation, since there was only a limited number of participants in the area at any given time. The area was frequently traveled by patients, staff, and family members, causing numerous distractions for the participants during the presentation.

Although the DNP project facility has a wound care consultant, there was not a full-time wound treatment nurse on staff to be responsible for monitoring and treating the PUs. This created an additional limitation influencing the possible improvement in the incidence of PU's. Furthermore, individual unit nurses were responsible for treating their own patient's wounds on top of already heavy patient assignments. It was observed that nursing staff did not give PU prevention education a high priority during their shifts as a result of these responsibilities.

### **Strengths to Overcome the Barriers**

The strength of the QI project was that a wound care consultant was in the facility once a week assessing the PUs and making recommendations about treatment strategies in connection with healing PU's. During the interview process from July 22, 2022, to August 19, 2022, the staff was extremely helpful and expressed their compassion for caring for the patients within the facility. As mentioned above, staffing issues and heavy patient assignments were barriers to providing good skin care; however, the staff went to great lengths not to let these issues affect patient care. For future projects focused on PU's and education, the DON/ADON could ensure

that the PI is given adequate space, tools, and resources such as a projector for the QI presentation. Through the provision of the location, administration can model behavior that promotes the importance of education, which may lead to better patient outcomes and staff investment in the prevention of PU's.

### **Discussion**

It is the PI's belief that the responsibility to provide quality care does not diminish and continues until the patient reaches the end of his or her life. Prevention of PUs is not a simple task. In fact, it is an overly complex process. Nursing staff at the DNP project site require a great deal of continuing education regarding the prevention of PUs since they play a significant role in providing care. The QI project was successful in increasing the staff's knowledge level but did not significantly affect the PUs rates. However, post-implementation the PUs rate was reported to be declined to six in week four (Figure 3; Appendix M). The educational PowerPoint raised awareness about the importance of the nursing staff assessing the risk of PUs on every patient.

Although previous research on PU prevention has been completed, very few studies have explored the impact of education on staff with heavy patient loads. Previous studies also suffered from small sample sizes. This concurs with the research of Schmidt, 2022, Harrington et al., 2020 and Lavalley et al., 2019 who have discussed and reported that staffing levels in LTC have been decreasing, adversely impacting nursing care of the residents of these facilities.

The PI's QI project provided support for the nursing staff education on PUs prevention. The DNP project answered the initial question about whether an increase in nursing knowledge prevented or helped reduce PUs at the DNP project site. The main conclusion that can be drawn from this project was that PUs prevention education increases nursing staff knowledge base over time. The data obtained from the DNP study was supported by the research of Seo & Roh, 2020,

and Stolt et al.,2019 who determined that increased education did in fact improve knowledge of staff and had an impact on PU's. The findings from the PI's project confer with research that are changing the way that nurses and CNAs care for patients through knowledge will help prevent PUs. The project results showed that the nursing staff's knowledge base increased. Subsequently, the PUs for the facility decreased.

Unfortunately, the PI could not determine if BSNs were indeed change agents and provided a higher level of patient care. Although, an increase in the number of RNs at the DNP project site and improved skill mix could be an approach that improved the quality of care for residents (Jutkowitz et al., 2022). A correlation between educational level and patient care could not be determined. Although there has been research devoted to this topic, PI determined that the analysis of BSNs and better patient's outcome needed further investigation that was beyond the timeframe for this DNP project.

As a result, the PI was not able to determine if the skill mix, along with the increased nurse-to-patient ratio, hindered the quality of care and outcome of the patient. It remained unclear whether the nursing staffing levels, and skill mix of the DNP project site could be optimized in a way that does not adversely affect the quality of life of the residents. At the DNP project site, the percentage of RNs with BSN was low. Likewise, the number of RNs participants with or without BSN compared to the number of LPN and CNAs that participated in the DNP project data collection was minimal. The PI has determined that lower percentage of RNs with BSN

Although COVID-19 did not impact the PI's ability to present the PU's PowerPoint presentation, the PI found that COVID-19 did have a tremendous impact on staffing levels in nursing homes which was supported by the research of Loomer et al., 2022. During the PI's

research, a lot of information and research was uncovered that supported the thoughts about the rising incidence of PUs in patients who reside in a long-term care facility/nursing home. The COVID-19 pandemic required LTC staff to balance the containment of the coronavirus while maintaining resident's quality of care. Stipulations that were put in place at the DNP project site that required additional interventions and tasks from the staff to effectively care for the residents and not expose them to COVID-19. Consequently, the staff changes in work conditions and punitive measures caused physical and psychological stress. These findings tie well with the previous studies of Hoedi et al., 2022, who also found this to be true among staff in other LTC facilities. Since the COVID-19 pandemic, the staffing turnover rate at the PI's DNP project site has steadily declined. Inconsistency in staffing may have contributed to the facility's rise in PUs because patients received inadequate care due to the frequent staff turnover, also correlating with the research of Loomer et al., 2022. With the attrition of seasoned staff from the LTC, management was forced to hire new RNs, LPNs, and CNAs who were not familiar with the residents, as a result, care was rushed, and corners were cut to speed up the process, contributing to the skin breakdown and increased PU's. It is important to highlight an increase in the staffing turnover rate caused a negative impact on the standard of care, increased the workload of the remaining staff, altered continuity of care, caused psychological and physical distress for the those who continued to work in the facility (Gilbert et al., 2021).

The participants were impressed and satisfied with the format and implementation of the QI project. Several participants informed the PI that PUs PowerPoint presentation was highly informative and easily understood. Collectively, the overall data results of the project appear to be consistent with the verbal feedback from the participants. It was recognized by the participants that the focus of the DNP project was a major area of patient care. The participants

post-test scores indicated that nursing staff recognized the importance of their role in PUs prevention by an increase in the post education test scores. One concern of the findings was that 50 participants out of the 67 total nursing staff did not complete the PUs prevention pre and post-test. Taking this into consideration, it can be speculated that PUs prevention education will continue to be an ongoing preventative measure in LTC, thus increasing participation in post-educational evaluations regarding the retention of information.

#### Correlation of Results to Conceptual Framework and Transitional Model

Lewin's Change Theory (1947) *unfreezing* phased supported the PI's results because management recognized that a PUs problem existed within the facility. They supported the PI's intervention to help reduce the facility's PUs rate. During the *changing* phase, the PI identified an appropriate intervention for continued education on PUs prevention within the facility. The PUs PowerPoint presentation helped the stakeholders at the DNP project site realize that prompted and regular training prevents PUs. The *refreezing* phase, the PI's PUs PowerPoint presentation solidified a solution for the stakeholders at the DNP project site as a method to continue to educate the nursing staff and ultimately dissipate PUs within the building.

The PI based her strategy for QI on the Plan-Do-Study-Act (PDSA) EB translation model. The PI utilized the PDSA model as a systematic way to initiate a quality improvement project that facilitated learning and knowledge. The first and second step of the PDSA model was the *Plan and Do* phase for which the PI developed and integrated a PUs prevention presentation for the nursing staff who are involved in direct patient care. The *Plan* phase impacted the PI's project because it allowed the staff at the DNP project site to identify patients that are at risk for PUs. In the second step, *the Do* phase, consisted of training nursing staff on PUs prevention. By collaborating with the staff, the PI was able to successfully initiate his DNP

presentation, increasing staff knowledge of PUs, reducing PUs rates. The *Do phase* also contributed to the success of the project, as patient care was optimized by the end of the project period due to the increased staff knowledge of PUs prevention. During the third step, the *Study phase*, the PI evaluated the participants pre and post-test results. In addition, the weekly reported PUs rate pre and post implementation of the PI's project was analyzed. The fourth step was the *Act phase* in which the participants put their newly acquired knowledge on PUs prevention to test which resulted in a reduction in the PUs rate. The *Act phase* impacted the project because the patient's nutrition and hydration were optimized. Patients were also repositioned every two hours in order to minimize and alleviate pressure on certain parts of their bodies as a result of the training.

### **Dissemination of Results**

The PI has disseminated the results to the DON/ADON via email (Appendix N). The PI has given the DON/ADON permission to disseminate the results to the staff via their employer's email address. Therefore, the participants that supported the implementation of the QI PowerPoint presentation can be informed about the outcome of the project.

### **Recommendation for Future Practice**

In LTC, nurses and CNAs are responsible for providing direct patient care. Due to the complexity of the patient assignments, it is difficult and complicated for the nursing staff to prevent PUs. Therefore, it is recommended that the nursing staff have regular continued education about PUs prevention. It is imperative that the nursing staff be provided with ongoing education to facilitate an increase in their knowledge level to be able to recognize, intervene, and prevent PUs. There may be a reduction in the rates of PUs occurring in LTC as evidenced by the data obtained through this DNP project. It is hoped that attending the PI's PowerPoint

presentation will inspire everyone involved in patient care to take more preventive measures to address PU. A proactive approach to preventing these potentially life-threatening and preventable conditions is required from administrators, staff educators, patient advocates, and staffing coordinators. It is important to recognize that pressure ulcers are more than just a risk score. It is imperative that all those involved in the care of long-term care residents support and intervene in order to prevent them, thereby protecting the quality of life for those in their care.

Finally, the staff matrix should be assessed for the necessary adjustments among the ratio of patient to nurse or CNAs based on acuity. The improvement in the nurse-to-patient ratio may help decrease PUs. With the nursing shortage, this will be difficult to overcome. This likely can result in a higher return on investment (ROI) because less money will be spent on treating residents' PU's.

### **Conclusion**

After having greater than ten years of experience in long-term care, the biggest concern for this PI was the safety of the patients who live in long-term care. The purpose of families placing their loved ones in long-term care is to ensure that they are receiving the same quality of care they would provide if their time and lifestyle permitted. Some families visit their loved ones daily or even several times a day to ensure that care is provided. No one could be expected to see the down and dirty aspects of long-term care except the people who work on the front lines. As a patient advocate and supervisory nurse, this PI communicated concerns regarding staff reductions with administration and management so that they could understand how their decisions affected the care provided to patients. Unfortunately, the PI never saw anything change. Workloads were excessive and unrealistic, ultimately contributing to a high turnover rate among nurses. Consequently, patients who were unable to care for themselves suffered greatly as



a result of this prominent level of attrition. Due to the PI's past work experience in LTC, the PI was always aware of the significant issues which needed to be addressed in long-term care.

As the PI searched for articles on the topic, a lot of information and research was uncovered that supported my thoughts about the rising incidence of PUs in patients who reside in a long-term care facility/nursing home. Some of the literature found by the PI supported the prevalence of PUs in long-term care patients, while other literature offered conflicting information. The contradictory evidence regarding pressure ulcer prevalence in nursing homes provided the rationale for the PI to investigate this topic further. The overall goal is that the increased knowledge level through training of nursing staff will help further reduce PUs over the long term. Conducting the QI project incurred costs of less than \$150, an exceedingly small fraction of the cost of treating a PU which was previously discussed at approximately \$500 to \$70,000 annually. Therefore, continuing education for LTC nursing staff should be a valuable indicator for reducing treatment costs, reducing patient suffering, and bridging the knowledge gap between staff and patients about preventable PUs. More awareness and proactive measures are essential to increasing not only the quality of care but also the quality of life for these vulnerable patients.

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**Appendix A****PDSA Permission Request**

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**Re: Permission Request - PDSA (Keeshes Kearny)**

2 messages

**Pamela L Quick** <quik@mit.edu>

Wed, Dec 1, 2021 at 2:55 PM

To: "kragla2@uncg.edu" &lt;kragla2@uncg.edu&gt;

Cc: Janine Stanley &lt;janine@deming.org&gt;

Dear Keeshes,

Thank you for your message. I am happy to grant nonexclusive permission to reprint the PDSA cycle in your forthcoming paper as part of your academic studies at the University of North Carolina at Greensboro. Please indicate that the cycle is reprinted from W. Edwards Deming, *The New Economics for Industry, Government, Education, third edition*, figure 13, page 91, reprinted courtesy of The MIT Press.

If you have further questions, please let me know.

With best wishes,

Pamela

Pamela Quick  
Subsidiary Rights Manager  
The MIT Press  
One Broadway, Floor 12  
Cambridge, MA 02142, USA  
1-617-253-0080  
[quik@mit.edu](mailto:quik@mit.edu)

Begin forwarded message:

**From:** Janine Stanley <[janine@deming.org](mailto:janine@deming.org)>

**Subject:** Permission Request - PDSA

**Date:** November 16, 2021 at 3:42:03 PM PST

**To:** Pam Quick <[quik@mit.edu](mailto:quik@mit.edu)>

**Cc:** [kragla2@uncg.edu](mailto:kragla2@uncg.edu)

Hi Pamela,

We have received a permission request from Keeshes Kearny, a student at the University of North Carolina at Greensboro. Keeshes is seeking permission to use the PDSA model for a quality improvement project as part of fulfilling a doctorate degree requirement.

Best regards,

Janine

Janine Stanley

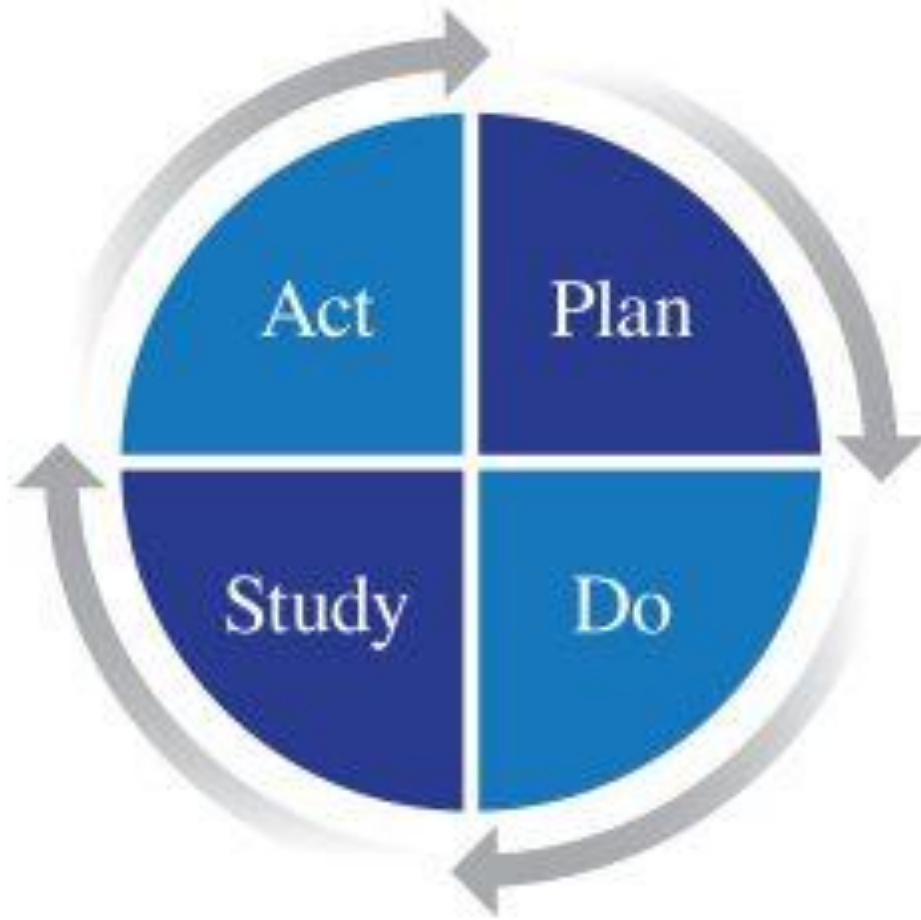
Senior Administrative Specialist  
The W. Edwards Deming Institute®

[Janine@deming.org](mailto:Janine@deming.org)

[www.deming.org](http://www.deming.org)

## Appendix B

Figure 1

*PDSA Cycle Diagram*

Note: The cycle is reprinted from W. Edwards Deming, *The New Economics for Industry, Government, Education, third edition*, figure 13, p. 91, reprinted courtesy of The MIT Press.

## Appendix C

### Pressure Ulcer Prevention PowerPoint Presentation Outline

Presented by: Keeshes Kearney, MSN-Ed. MHA, BSN, RN

- ❖ The Skin
  - Three main components
  - Epidermis (thickest and outer layer)
  - Dermis (Middle layer, nerve endings, blood vessels, hair follicles)
  - Subcutaneous tissue (Innermost layer, provides insulation but limited blood supply)
  
- ❖ Older Adults and The Skin
  - Less sweat glands
  - Atrophy & thinning of all layers
  - Collagen/elastin fibers degenerate
  - Atherosclerosis of cutaneous vessels
  - Decrease in sebaceous glands
  - Decrease in immune response
  - Less elasticity
  - Changes in thermoregulation
  
- ❖ Pathophysiology
  - Complexed
  - External Forces (Pressure, Shearing forces, Friction, Moisture)
  
- ❖ Host-specific factors
  
- ❖ Pressure Ulcers Definition
  - Unrelieved pressure
  - Bony prominence
  - Restricted blood flow
  
- ❖ Why Pressure Ulcers Prevention Is Needed?
  - Rates continue to escalate
  - Nationally PUs incidents are being reported as high as 72.5%
  - In 2015, the prevalence of PUs worldwide was estimated to be 40%
  - There was a 58% reported incidence of PUs in extended care homes
  
- ❖ Cost Of Treating Pressure Ulcers
  - Approximately \$13.9 million is spent in residential community settings to treat PUs
  - The Centers for Medicare and Medicaid Services do not reimburse for care
  - The United States (US) spends more than \$11 billion per year in treatment regimens
  
- ❖ Pressure Injuries Contributing Factors
  - Increased staff turnover

- Increased staff-to-patient ratio
- Altered nutritional status (hypoalbuminemia)
- Altered skin perfusion
- Less turning and repositioning
- Immobility (most important and may be permanent or transient)
- Incontinence
- Neurological and chronic diseases
- Other (age, males, and Caucasians)
  
- ❖ Pressure Injuries Effects on A Patient
  - Pain
  - Social Isolation
  - Infection
  - Decrease quality of life
  
- ❖ Multidisciplinary Approach to Preventing Pressure Ulcers
  - Family Practice
  - Infectious Disease
  - Orthopedics
  - Nurse Practitioner
  - Physician Assistant
  - Pharmacist
  - Social Worker
  - Physical Therapist
  - Psychology
  - Registered Nurses
  - LPNs
  - CNAs, HCTs
  - Dieticians
  - ICP
  - Patient
  - Housekeeping
  
- ❖ National Pressure Injury Advisory Panel Stages of Pressure Ulcers
  - Suspected Deep Tissue Injury
  - Stage 1
  - Stage 2
  - Stage 3
  - Stage 4
  - Unstageable
  
- ❖ Normal Skin Tissue
  
- ❖ Suspected Deep Tissue Injury
  - Purple, maroon local area discolored intact skin or blood-filled blister

- ❖ Stage 1
  - Intact skin, non-blanchable erythema especially over bony region. (Eg: greater trochanter, sacrum, ischial tuberosity)
  
- ❖ Stage 2
  - Partial thickness tissue loss
  
- ❖ Stage 3
  - Full thickness, fat visible but NO bone, NO tendon, NO muscle exposed
  
- ❖ Stage 4
  - Full thickness skin and tissue to bone
  
- ❖ Unstageable
  - Obscured Full-thickness tissue loss covered by necrotic tissue
  
- ❖ Points of Pressure Locations
  
- ❖ Stages of Wound Healing
  - Hemostasis
  - Inflammatory
  - Proliferation
  - Remodeling
  
- ❖ External Factors
  - Pressure
    - Prevents the deliverance of oxygen tissue
    - Prevents the deliverance of nutrients to the tissue
    - Causes accumulation of metabolic waste products
    - Greatest over bony prominences
    - Irreversible tissue damage if pressure is applied greater than 2 hours
    - Muscle is the most susceptible to pressure induce injury
  - Shearing
    - Patient in an incline position
    - Pulled downward by gravity (Deep tissue such as muscle and fat)
    - Superficial epidermis and dermis remain fixed
    - Blood vessels are stretched and angulated
  - Friction
    - Manual Handling such as Dragging
    - Damage to the most superficial layer of the skin
  - Moisture
    - Perspiration
    - Feces
    - Urine
  
- ❖ What are you looking for when you assess the skin and wounds??

- ❖ Identifying High-risk Patients
  - Clinical Judgement
  - Reassessment periodically
  
- ❖ Braden Scale
  - Categorizing Risk
  - “Braden Scale” for predicting pressure sore risk... i.e. bedsores, decubitus ulcers...
  - The Braden scale rates patients in six subscales: (sensory perception, moisture, activity, mobility, nutrition, friction, and shear)
  - Patients are categorized into three risk groups
  - The maximum total score is 23
  - A score of 18 or less indicates high-risk
  
- ❖ Documentation
  - Very important
  - Medical record
  - Flowsheet
  - Handover
  - Pictures
  
- ❖ PREVENTION IS THE KEY
  
- ❖ Skin Care/Relieve Pressure
  - Proper positioning
  - ✓ turn and reposition q 2 hours according to risk factors (Slow repositioning for ICU patients)
  - ✓ Place patient at a 30-degree angle to offset direct pressure on the greater trochanter
  - ✓ Proper wheelchair position
  - ✓ Head of the bed should be in a low elevated position (no higher than 45 degree)
  - ✓ Check proper position and placement of medical devices
  - ✓ Don't turn on a reddened area
  - ✓ Utilize devices that helps to relieve pressure
  - ✓ Wedge foam between knees and ankles
  - ✓ Use a pillow to float and elevate the heels
  - ✓ Use heal protectors
  - ✓ Footstool/footrest if patient's feet do not touch the floor
  - ✓ Pressure reduction mattress (alternating air)
  - ✓ Specialty bed (may not be ideal for all patients)
  - ✓ Use an overlay on mattresses that has static
  - ✓ Do not use doughnut seat cushions for wheelchairs
  - ✓ No massaging over bony prominences
  - ✓ Don't drag the patient in bed
  - ✓ Daily skin impaction and cleaning
  - ✓ Using Protective Ointments routinely
  - ✓ Great Incontinence care



- ✓ Continue skin checks and looks for areas at risk
- ✓ Keep wounds intact
- ✓ Nutrition
- ✓ Prevention Dressings
- ✓ Sunscreen
- ✓ Layers of clothing
- ✓ Clean soil patients at the time of incontinence
  
- ❖ Nutrition
  - Protein
  - Iron
  - Zinc
  - Vitamin C
  - Vitamin B12
  - Vitamin E
  - Look for signs of malnutrition
  - ✓ Decrease muscle mass,
  - ✓ Subcutaneous fat
  - ✓ Decrease functional status
  - Add a nutritional supplement
  - ✓ Juven
  - ✓ Pro-stat
  - ✓ Ensure
  
- ❖ Hydration
  - Ensure adequate hydration
  - Intravascular fluid transport nutrients to the cells and the waste away from the cells
  - Assess for dehydration
  - ✓ Fever
  - ✓ Sweating
  - ✓ Draining wounds
  - ✓ Use of diuretics
  - ✓ AMS
  - ✓ Diarrhea
  - ✓ Vomiting
  - ✓ Increased respiratory rate
  
- ❖ Treatment
  - Types of Dressings
  - Debridement
  - Local and/or systemic antibiotic
    - Dressings
  - Gauze
  - Transparent
  - Hydrogels
  - Hydrocolloids

- Alginate
  - Foam
    - Gauze Dressing
  - Use to fill dead space
  - Absorbs secretions
  - Cleansing material (patting not rubbing)
  - Helps medication stay on the wound
  - Do not use on wounds that requires a wet-to-dry dressings!!!
    - Transparent Dressing/Film
  - Use on Stage 1 wounds
  - Can be used on shallow wounds with minimal or no exudate
  - Are Waterproof for the site
  - Protect from friction and shearing
  - Promotes a bed for autolytic debridement
    - Hydrogels
  - Good to use on Stage 2 or 3
  - Wound can have light exudate
  - Limited absorptive capability
  - No residue is left in the wound
    - Hydrocolloids
  - Used for Stage 2, 3, 4
  - Prevents contamination
  - Moderate to heavy exudate
  - Moisture helps reduce pain to nerves
    - Alginate
  - Used for Stage 2, 3, and 4
  - High capacity for absorption
  - Interacts with wound fluids to form a gel that creates a moist wound environment
  - Apply within wound borders
    - Foam Dressing
  - Used for moist wound
  - Used for skin that is at risk for shearing
  - Prevent dressing-related trauma
  - Managing exuding wounds
  - Minimizing discomfort and pain
    - Wound Debridement
  - Mechanical
  - Sharp
  - Enzymatic
  - Autolytic
    - Mechanical Debridement
  - Wet-to-dry dressing (removes nonviable and viable tissues)
  - Hydrotherapy
  - Wound irrigation
  - Scrubbing

- Used for wounds with a lot of thick exudate, slough, or loose necrotic tissue
- Do not moistening the debridement dressing prior to removal
  - Sharp Debridement
- Involves the use of a scalpel or scissors in the operating room or at the bedside.
- This is the most rapid form of debridement; it is indicated when there is evidence of cellulitis or sepsis and is also used to remove thick eschar and extensive necrotic tissue.
  - Enzymatic Debridement
- Uses the topical application of agents such as collagenase, papain, fibrinolysin, and deoxyribonuclease which is effective in promoting the growth of granulation tissue.
- These agents are particularly useful in long-term care settings and in patients who may not tolerate surgery.
  - Autolytic Debridement
- Uses an occlusive dressing to cover a wound so that necrotic tissue is digested by enzymes normally present in wound tissue.
- This often works best on wounds with minimal exudate and should not be used in the presence of infection.
- Debridement should stop once necrotic tissue has been removed and granulation tissue is present.

**Appendix D****Preliminary Site Approval Letter**

11/04/2021

**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 Keeshes Kearney, and I agree to provide the support requested. This letter provides permission for Keeshes Kearney, a DNP student at UNCG, to conduct the DNP project that will involve, Everybody Move: An Educational Quality Improvement Project for Prevention of Pressure Ulcers in Long-Term Care Specifically, Brookridge Retirement Community are committed to working with this DNP student to provide the support, time, and space as needed— approximately one month and to allow the student to use our facility for this project.**

**It is my 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,**

**Cathy James, DON**

*1199 Hayes Forest Drive*

*Winston-Salem, NC.27106*

**Appendix E**  
**Meeting Flyer**



*HOW CAN YOU HELP YOUR FACILITY PREVENT PRESSURE INJURIES????*

Come spend 30 minutes with me while I present an educational Pressure Injury Prevention PowerPoint presentation.

Date: and Time: August 19, 2022 @ 1 pm and August 20, 2022 @ 7:30 am

Location: Conference room

Intended audience: All staff who provide direct care to patients.

Lunch and Breakfast will be provided.

**Appendix F**

**Pieper Pressure Ulcer Knowledge Test**

**For each question, mark the True, False, or Don't Know box.**

Question	True	False	Don't Know
1. Slough is yellow or cream-colored necrotic /devitalized tissue on a wound bed.			
2. A pressure injury/ulcer is a sterile wound.			
3. Foam dressings increase the pain in the wound.			
4. Hot water and soap may dry the skin and increase the risk for pressure injury/ulcers.			
5. Chair-bound persons should be fitted for a chair cushion.			
6. A Stage 3 pressure injury/ulcer is a partial thickness skin loss involving the epidermis and/or dermis.			
7. Hydrogel dressings should not be used on pressure injury/ulcers with granulation tissue.			
8. A person confined to bed should be repositioned based on the individual's risk factors and the support surface's characteristics.			
9. A pressure injury/ulcer scar will break down faster than unwounded skin.			
10. Pressure injury/ulcers progress in a linear fashion from Stage 1 to 2 to 3 to 4.			
11. Eschar is healthy tissue.			
12. Skin that doesn't blanch when pressed is a Stage 1 pressure injury/ulcer.			
13. The goal of palliative care is wound healing.			
14. A Stage 2 pressure injury/ulcer is a full thickness skin loss.			
15. Dragging the patient up in bed increases friction.			
16. Small position changes may need to be used for patients who cannot tolerate major shifts in body positioning.			
17. Honey dressings can sting when initially placed in a wound.			
18. An incontinent patient should have a toileting care plan.			
19. A pressure redistribution surface manages tissue load and the climate against the skin.			

20. A Stage 2 pressure injury/ulcer may have slough in its base.			
21. If necrotic tissue is present and if bone can be seen or palpated, the ulcer is a Stage 4.			
22. When possible, high-protein oral nutritional supplements should be used in addition to usual diet for patients at high risk for pressure injury/ulcers.			
23. The home care setting has unique considerations for support surface selection.			
24. When necrotic tissue is removed, an unstageable pressure injury/ulcer will be classified as a Stage 2 injury/ulcer.			
25. Donut devices/ring cushions help to prevent pressure injury/ulcers.			
26. A specialty bed should be used for all patients at high risk for pressure injury/ulcers.			
27. Foam dressing may be used on areas at risk for shear injury.			
28. Persons at risk for pressure injury/ulcers should be nutritionally assessed (i.e., weight, nutrition intake, blood work).			
29. Biofilms may develop in any type of wound.			
30. Critical care patients may need slow, gradual turning because of being hemodynamically unstable.			
31. Blanching refers to whiteness when pressure is applied to a reddened area.			
32. A blister on the heel is nothing to worry about.			
33. Staff education alone may reduce the incidence of pressure injury/ulcers.			
34. Early changes associated with pressure injury/ulcer development may be missed in persons with darker skin tones.			
35. A footstool/footrest should not be used for an immobile patient whose feet do not reach the floor.			
36. Deep tissue injury (DTI) may be difficult to detect in individuals with dark skin tones.			
37. Bone, tendon, or muscle may be exposed in a Stage 3 pressure injury/ulcer.			
38. Eschar is good for wound healing.			
39. It may be difficult to distinguish between moisture associated skin damage and a pressure injury/ulcer.			

40. Wounds that become chronic are frequently stalled in the inflammatory phase of healing.			
41. Dry, adherent eschar on the heels should not be removed.			
42. Deep tissue injury is a localized area of purple or maroon discolored intact skin or a blood-filled blister.			
43. Massage of bony prominences is essential for quality skin care.			
44. Poor posture in a wheel chair may be the cause of a pressure injury/ulcer.			
45. For persons who have incontinence, skin cleaning should occur at the time of soiling and at routine intervals.			
46. Patients who are spinal cord injured need knowledge about pressure injury/ulcer prevention and self-care.			
47. In large and deep pressure injury/ulcers, the number of dressings used needs to be counted and documented so that all dressings are removed at the next dressing change.			
48. A mucosal membrane pressure injury/ulcer is found on mucous membrane as the result of medical equipment used at that time on that location; this pressure injury is not staged.			
49. Pressure injury/ulcers can occur around the ears in a person using oxygen by nasal cannula.			
50. Persons, who are immobile and can be taught, should shift their weight every 30 minutes while sitting in a chair.			
51. Stage 1 pressure injury/ulcers are intact skin with non-blanchable erythema over a bony prominence.			
52. When the ulcer base is totally covered by slough, it cannot be staged.			
53. Selection of a support surface should only consider the person's level of pressure injury/ulcer risk.			
54. Shear injury is not a concern for a patient using a lateral-rotation bed.			
55. It is not necessary to have the patient with a spinal cord injury evaluated for seating.			
56. To help prevent pressure injury/ulcers, the head of the bed should be elevated at a 45-degree angle or higher.			
57. Urinary catheter tubing should be positioned under the leg.			
58. Pressure injury/ulcers may be avoided in patients who are obese with use of properly sized equipment.			



59. A dressing should keep the wound bed moist, but the surrounding skin dry.			
60. Hydrocolloid and film dressings must be carefully removed from fragile skin.			
61. Nurses should avoid turning a patient onto a reddened area.			
62. Skin tears are classified as Stage 2 pressure injury/ulcers.			
63. A Stage 3 pressure injury/ulcer may appear shallow if located on the ear, malleolus/ankle, or heel.			
64. Hydrocolloid dressings should be used on an infected wound.			
65. Pressure injury/ulcers are a lifelong concern for a person who is spinal cord injured.			
66. Pressure injury/ulcers can be cleansed with water that is suitable for drinking.			
67. Alginate dressings can be used for heavily draining pressure injury/ulcers or those with clinical evidence of infection.			
68. Deep tissue injury will not progress to another injury/ulcer stage.			
69. Film dressings absorb a lot of drainage.			
70. Non-sting skin prep should be used around a wound to protect surrounding tissue from moisture.			
71. A Stage 4 pressure injury/ulcer never has undermining.			
72. Bacteria can develop permanent immunity to silver dressings.			

**Appendix G****Meeting Announcement**

April 4, 2022

To All Family Members, RNs, LPNs, and CNAs

I would like to invite you to an educational training session on pressure ulcer (PUs) prevention for my Quality Improvement DNP project for UNCG. This education is intended for long-term care families and staff that are involved in direct patient care. Attendance to this meeting is strictly voluntary. However, I would greatly appreciate your participation in allowing me the opportunity to share with you my PowerPoint presentation on PU prevention.

The presentation will be held on August 19, 2022 @ 1 pm and August 20, 2022 @ 7:30 am.

I will provide lunch and breakfast for everyone that attends.

The location is in the conference room.

I appreciate your consideration of this request. I hope to see you at the meeting.

If you have any question regarding the meeting, I can be reached at (252) 767-4664.

Thank you for your time!

Sincerely,

Keeshes Kearney, MSN/Ed, MHA, BSN, RN, DNP Student

**Appendix H****Table 3:**

## Pressure Ulcers Knowledge Level

Participant 1	54	100	Increased
Participant 2	46	100	Increased
Participant 3	54	86	Increased
Participant 4	56	81	Increased
Participant 5	58	97	Increased
Participant 6	63	100	Increased
Participant 7	61	99	Increased
Participant 8	56	83	Increased
Participant 9	65	85	Increased
Participant 10	53	76	Increased
Participant 11	65	100	Increased
Participant 12	60	85	Increased
Participant 13	61	100	Increased
Participant 14	76	100	Increased
Participant 15	52	94	Increased
Participant 16	74	99	Increased
Participant 17	49	97	Increased

## Appendix I

## Pieper Pressure Ulcer Knowledge Test Answer Key

Question	Answer	
1. Slough is yellow or cream-colored necrotic /devitalized tissue on a wound bed.	True	
2. A pressure injury/ulcer is a sterile wound.		False
3. Foam dressings increase the pain in the wound.		False
4. Hot water and soap may dry the skin and increase the risk for pressure injury/ulcers.	True	
5. Chair-bound persons should be fitted for a chair cushion.	True	
6. A Stage 3 pressure injury/ulcer is a partial thickness skin loss involving the epidermis and/or dermis.		False
7. Hydrogel dressings should not be used on pressure injury/ulcers with granulation tissue.		False
8. A person confined to bed should be repositioned based on the individual's risk factors and the support surface's characteristics.	True	
9. A pressure injury/ulcer scar will break down faster than unwounded skin.	True	
10. Pressure injury/ulcers progress in a linear fashion from Stage 1 to 2 to 3 to 4.		False
11. Eschar is healthy tissue.		False
12. Skin that doesn't blanch when pressed is a Stage 1 pressure injury/ulcer.	True	
13. The goal of palliative care is wound healing.		False
14. A Stage 2 pressure injury/ulcer is a full thickness skin loss.		False
15. Dragging the patient up in bed increases friction.	True	
16. Small position changes may need to be used for patients who cannot tolerate major shifts in body positioning.	True	
17. Honey dressings can sting when initially placed in a wound.	True	
18. An incontinent patient should have a toileting care plan.	True	
19. A pressure redistribution surface manages tissue load and the climate against the skin.	True	
20. A Stage 2 pressure injury/ulcer may have slough in its base.		False
21. If necrotic tissue is present and if bone can be seen or palpated, the ulcer is a Stage 4.	True	

22. When possible, high-protein oral nutritional supplements should be used in addition to usual diet for patients at high risk for pressure injury/ulcers.	<b>True</b>	
23. The home care setting has unique considerations for support surface selection.	<b>True</b>	
24. When necrotic tissue is removed, an unstageable pressure injury/ulcer will be classified as a Stage 2 injury/ulcer.		<b>False</b>
25. Donut devices/ring cushions help to prevent pressure injury/ulcers.		<b>False</b>
26. A specialty bed should be used for all patients at high risk for pressure injury/ulcers.		<b>False</b>
27. Foam dressing may be used on areas at risk for shear injury.	<b>True</b>	
28. Persons at risk for pressure injury/ulcers should be nutritionally assessed (i.e., weight, nutrition intake, blood work).	<b>True</b>	
29. Biofilms may develop in any type of wound.	<b>True</b>	
30. Critical care patients may need slow, gradual turning because of being hemodynamically unstable.	<b>True</b>	
31. Blanching refers to whiteness when pressure is applied to a reddened area.	<b>True</b>	
32. A blister on the heel is nothing to worry about.		<b>False</b>
33. Staff education alone may reduce the incidence of pressure injury/ulcers.		<b>False</b>
34. Early changes associated with pressure injury/ulcer development may be missed in persons with darker skin tones.	<b>True</b>	
35. A footstool/footrest should not be used for an immobile patient whose feet do not reach the floor.		<b>False</b>
36. Deep tissue injury (DTI) may be difficult to detect in individuals with dark skin tones.	<b>True</b>	
37. Bone, tendon, or muscle may be exposed in a Stage 3 pressure injury/ulcer.		<b>False</b>
38. Eschar is good for wound healing.		<b>False</b>
39. It may be difficult to distinguish between moisture associated skin damage and a pressure injury/ulcer.	<b>True</b>	
40. Wounds that become chronic are frequently stalled in the inflammatory phase of healing.	<b>True</b>	
41. Dry, adherent eschar on the heels should not be removed.	<b>True</b>	
42. Deep tissue injury is a localized area of purple or maroon discolored intact skin or a blood-filled blister.	<b>True</b>	
43. Massage of bony prominences is essential for quality skin care.		<b>False</b>

44. Poor posture in a wheelchair may be the cause of a pressure injury/ulcer.	<b>True</b>	
45. For persons who have incontinence, skin cleaning should occur at the time of soiling and at routine intervals.	<b>True</b>	
46. Patients who are spinal cord injured need knowledge about pressure injury/ulcer prevention and self-care.	<b>True</b>	
47. In large and deep pressure injury/ulcers, the number of dressings used needs to be counted and documented so that all dressings are removed at the next dressing change.	<b>True</b>	
48. A mucosal membrane pressure injury/ulcer is found on mucous membrane as the result of medical equipment used at that time on that location; this pressure injury is not staged.	<b>True</b>	
49. Pressure injury/ulcers can occur around the ears in a person using oxygen by nasal cannula.	<b>True</b>	
50. Persons, who are immobile and can be taught, should shift their weight every 30 minutes while sitting in a chair.		<b>False</b>
51. Stage 1 pressure injury/ulcers are intact skin with non-blanchable erythema over a bony prominence.	<b>True</b>	
52. When the ulcer base is totally covered by slough, it cannot be staged.	<b>True</b>	
53. Selection of a support surface should only consider the person's level of pressure injury/ulcer risk.		<b>False</b>
54. Shear injury is not a concern for a patient using a lateral-rotation bed.		<b>False</b>
55. It is not necessary to have the patient with a spinal cord injury evaluated for seating.		<b>False</b>
56. To help prevent pressure injury/ulcers, the head of the bed should be elevated at a 45-degree angle or higher.		<b>False</b>
57. Urinary catheter tubing should be positioned under the leg.		<b>False</b>
58. Pressure injury/ulcers may be avoided in patients who are obese with use of properly sized equipment.	<b>True</b>	
59. A dressing should keep the wound bed moist, but the surrounding skin dry.	<b>True</b>	
60. Hydrocolloid and film dressings must be carefully removed from fragile skin.	<b>True</b>	
61. Nurses should avoid turning a patient onto a reddened area.	<b>True</b>	
62. Skin tears are classified as Stage 2 pressure injury/ulcers.		<b>False</b>
63. A Stage 3 pressure injury/ulcer may appear shallow if located on the ear, malleolus/ankle, or heel.	<b>True</b>	

64. Hydrocolloid dressings should be used on an infected wound.		<b>False</b>
65. Pressure injury/ulcers are a lifelong concern for a person who is spinal cord injured.	<b>True</b>	
66. Pressure injury/ulcers can be cleansed with water that is suitable for drinking.	<b>True</b>	
67. Alginate dressings can be used for heavily draining pressure injury/ulcers or those with clinical evidence of infection.	<b>True</b>	
68. Deep tissue injury will not progress to another injury/ulcer stage.		<b>False</b>
69. Film dressings absorb a lot of drainage.		<b>False</b>
70. Non-sting skin prep should be used around a wound to protect surrounding tissue from moisture.	<b>True</b>	
71. A Stage 4 pressure injury/ulcer never has undermining.		<b>False</b>
72. Bacteria can develop permanent immunity to silver dressings.		<b>False</b>

Retrieved from:

<https://www.ahrq.gov/patient-safety/settings/hospital/resource/pressureulcer/tool/pu7a.html>



## Appendix J

Table 1

*Pre and Post-test grade*

<b>Participants</b>	<b>Pretest grade</b>	<b>Post-test grade</b>
1	54	100
2	46	100
3	54	86
4	56	81
5	58	97
6	63	100
7	61	99
8	56	83
9	65	85
10	53	76
11	65	100
12	60	85
13	61	100
14	76	100
15	52	94
16	74	99
17	49	97
<i>Mean(average)</i>	59	93.05882353
<i>Standard deviation</i>	8.038967595	8.325192102

## Appendix K

Table 2

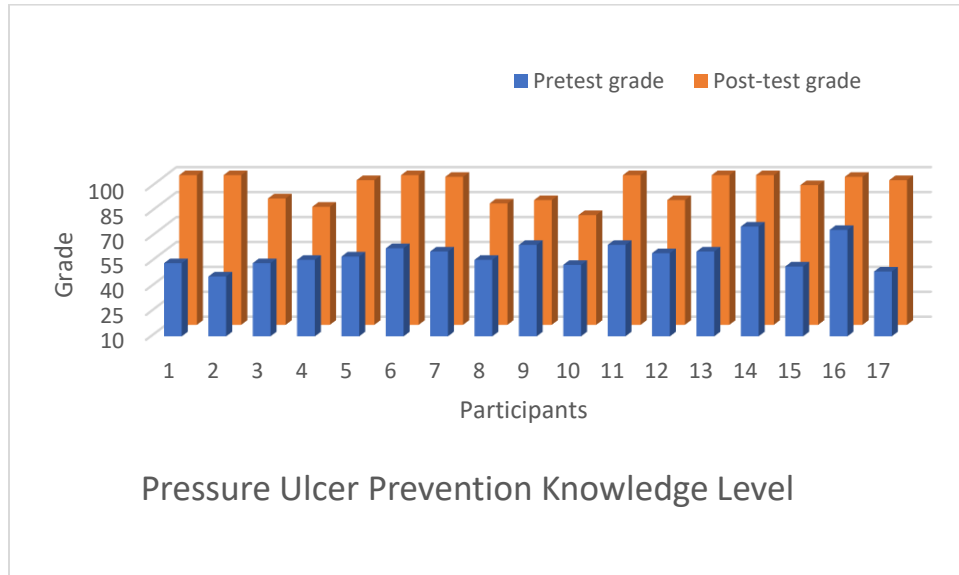
*t-Test: Paired Two Sample for Means*

	<i>Pretest</i>	<i>Post-test</i>
Mean	59	93.05882353
Variance	64.625	69.30882353
Observations	17	17
Pearson Correlation	0.256813689	
Hypothesized Mean Difference	0	
df	16	
t Stat	-14.07389236	
P(T<=t) one-tail	9.89573E-11	
t Critical one-tail	1.745883676	
P(T<=t) two-tail	*1.97915E-10	
t Critical two-tail	2.119905299	

Appendix L

Figure 2

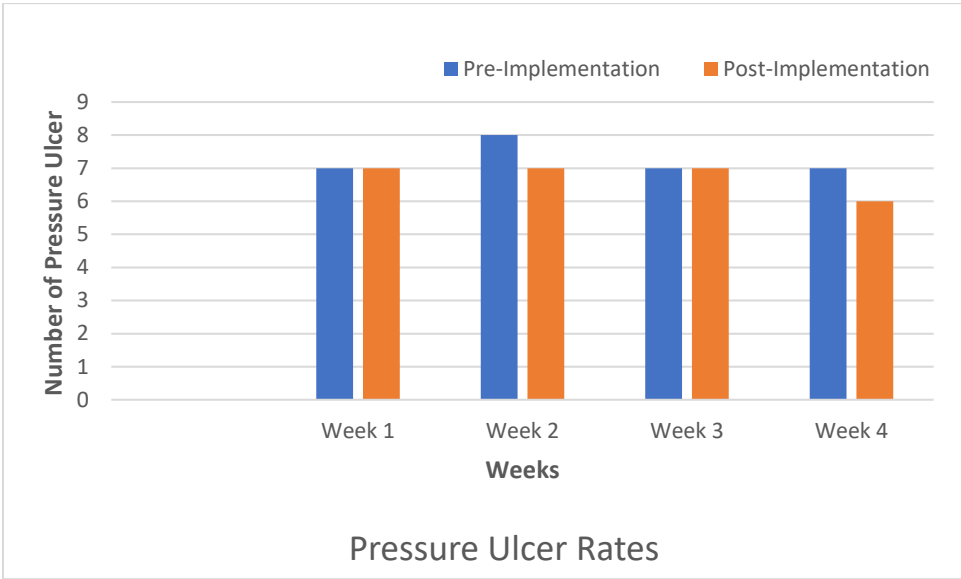
*Pressure Ulcer Prevention Knowledge Level*



Appendix M

Figure 3

Pressure Ulcer Rate



## Appendix N

### Dissemination of Results

2/26/23, 10:48 AM

UNCG Mail - Project Results



Keeshes Kearney <klragla2@uncg.edu>

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### Project Results

Keeshes Kearney <klragla2@uncg.edu>  
To: Hannah Word <hword@brh.org>

Sun, Feb 26, 2023 at 10:48 AM

Good morning, Hannah!

First, I want to thank you for allowing me to complete my DNP project at a facility that is under your leadership. My project has come to an end, and I wanted to share the results with you. The PI's DNP project was implemented on August 19-20, 2022. The Pressure Ulcer PowerPoint presentation was presented on different shifts. There was a total of 17 participants out of a total of 67 anticipated participants, calculated at a 25% response rate. Each of the participant's responses was graded according to the *Pieper Pressure Ulcer Knowledge Test* answer key. The participant's baseline knowledge level scores prior to the PU's presentation averaged 59%. Comparatively, the average knowledge level test scores post PUs presentation increased to 93%. Further, the PU rate at the DNP project site was reported by the DON as a weekly average of 7-8. Since the educational intervention, the DON has reported a weekly average of 6 PUs which is a reduction of 2% for these incidences.

Thank you again for your support!

--

Keeshes Ragland Kearney, MSN/Ed, MHA, BSN, RN

**Academic Integrity Policy**

"I have abided by the UNCG Academic Integrity Policy on this assignment."

Keeshes Kearney  
Signature

4/17/23  
Date