USING ONLINE EDUCATION TO IMPROVE WOUND DOCUMENTATION FOR THE COORDINATION OF CARE IN THE HOME HEALTH SETTING

By

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A DNP Project Submitted to Rasmussen University In Partial Fulfillment of the Requirements for the Degree of Doctor of Nursing Practice

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The DNP Project is designed as a clinical scholarship initiative that allows the graduate student to demonstrate expertise in nursing practice. The project integrates the role of the DNP in a comprehensive healthcare environment that includes utilization of leadership, consultation, advocacy, collaboration and in-depth interaction with experts from nursing and other disciplines.

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Abstract

Background: Approximately 30% of home health patients have wounds, and nearly half of wound documentation lacks crucial details on assessment and intervention. A retrospective chart audit revealed that 75% of the medical records at a home health agency (HHA) in Southeast Florida had incorrect wound classifications, 60% lacked documented coordination of the care related to wound management, and 100% of wound documentation showed some knowledge gap in wound description, type, and etiology.

Objective: To evaluate the impact of formal online wound documentation modules for home health nurses in improving wound documentation for the coordination of care, thereby improving patient outcomes.

Method: The methodology was a quantitative, descriptive, evidence-based practice change. A pre and posttest design was used with pre and posteducation chart audits.

Intervention: The intervention was two formal online education modules on wound documentation for home health nurses who perform wound care. The modules included a discussion on the types of wounds, staging pressure ulcers, wound assessment, documentation guidelines, signs and symptoms of infection, creating the plan of care, and coordination of care.

Outcomes: (a) The percent change in the home health nurses' wound documentation knowledge measured through a pre and posttest; (b) improved documentation efficacy and coordination of care measured through a pre and post education chart audit; (c) improved patient outcomes measured through a decrease in the average length of stay (ALOS) for home health patients receiving wound care; (d) a decrease in the Centers for Medicare and Medicaid Services' Home Health Quality Reporting Outcome Measure related to wounds, "Percentage of quality episodes in which the patient has one or more Stage 2-4 pressure ulcers, or an unstageable ulcer, present at

discharge that are new or worsened since the beginning of the quality episode"; and (e) post education satisfaction with the wound documentation modules.

Results: Most (92.8%) of the sample were registered nurses; 54% of the registered nurses had a Bachelor of Science in Nursing, 50% had > 10 years of experience as a nurse, and 78.6% had been in the home health setting for 5 years or less. The pretest and posttest aggregate scores were compared using the Wilcoxon signed-rank test. The Wilcoxon signed rank test revealed a significant increase in aggregate total scores from the pretest to posttest (z = -2.953, n = 12, p = .003). A difference score was used to compare the pre and postintervention chart audits. All category composite scores showed an improvement from preintervention to postintervention. Improved patient outcomes were measured through a decrease in the ALOS for home health patients receiving wound care. The ALOS decreased from preintervention, 75 days, to 59 days postintervention, calculating a relative change of -21%. Improved patient outcomes were also measured through a decrease in the Centers for Medicare and Medicaid Services' Home Health Quality Reporting Outcome Measure related to wounds. There was a reduction in the percentage of quality episodes with new or worsened ulcers at discharge from 0.6% preintervention to 0.0% postintervention, calculating a relative change of -100%. Using a mean analysis, the average of each question on the module evaluation was calculated to determine the mean of the overall satisfaction score. The mean overall satisfaction score = 4.69/5.

Conclusion: Using online education to improve wound documentation for the coordination of care in the home health setting increased nurses' knowledge of wound etiology and type, the different stages of pressure ulcers, and how wound documentation impacts the coordination of care. The increased knowledge improved the efficacy of documentation and coordination of care and patient outcomes.

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Introduction

Background

Home health care (HHC) is medical care provided in a patient's home. HHC services are provided by skilled medical professionals, such as nurses, physical therapists, occupational therapists, and speech therapists. HHC also includes skilled, nonmedical care, such as social services or assistance with activities of daily living from a home health aide (Centers for Medicare and Medicaid Services [CMS], n.d.).

HHC is not an entry-level care setting for new graduates. Home health nurses are expected to take the knowledge they have learned over time, usually in an acute care setting, and apply that knowledge to HHC. There is a difference in the care provided in the hospital and the home. There is also a difference in managing disease processes in the hospital and at home, and additional environmental factors to consider, such as varying levels of cleanliness and hygiene, increasing the risk of infection and hazards such as slippery floors, uneven surfaces, and unsecured pets, which could lead to accidents.

If nurses are not skilled at identifying the etiology of the wound based on the characteristics and location of the wound and the patient's medical history, they have not shown they are competent to provide safe care to the patient (Kielo-Viljamaa et al., 2022). Documentation and interventions must match the diagnosis. If a patient has a venous stasis ulcer and the interventions are for pressure relief, inaccurate wound documentation puts the patient and organization at risk.

A nursing degree does not mean a nurse can provide competent care in all situations. It should not be assumed that all nurses are skilled at assessment and know how to determine the etiology of every wound if they have not been provided with the education. According to

Gonzalez (2017), student nurses' pressure ulcer (PU) documentation corresponded closely with the wound expert documentation versus the staff nurses' documentation, concluding that continuing education (CE) beyond nursing school and the need to maintain and improve nurses' knowledge and skill sets was important.

In the home health setting, the patient may have several members on their home health team besides the patient and caregiver, nurse, and physician. Additional home health team members may include a home health aide and physical therapist. Additionally, if a patient's wound is complex, they may visit a wound clinic or have a visiting practitioner from a wound clinic. Coordination of care becomes critical with many people in and out of the patient's home.

According to the Agency for Healthcare Research and Quality (2018), care coordination is arranging patient care activities and sharing information among all members of the patient's care team to attain safer and more effective care. Nurses in the home oversee the patient's care and can provide critical insights into the patient's recovery process to the physician and specialists. This insight into the patient's routines and physical surroundings and monitoring how the patient is coping psychologically can provide a better overall picture of the patient's well-being, allowing the nurse to make appropriate recommendations to the physician and care team.

Significance

Proper wound documentation is a critical part of the day-to-day operations in most healthcare settings. Not only does it help ensure patients receive safe, high-quality care, but proper documentation also helps protect those providing care from litigation. Approximately 30% of home health patients have wounds (Silverstein, 2021). According to Hansen and Fossum (2016), nearly half of wound documentation lacks crucial details on assessment and intervention.

Inaccurate wound documentation can impact the ability to establish the best treatment options and overall wound-healing process (Coleman et al., 2017). According to Costrata, a tech-enabled wound care program, studies in the post-acute-care setting show a 50% error rate in PU staging and a 30% misidentification error rate in wound etiology (Ebberwein, 2021). These errors result in an ineffective treatment plan and hinder the wound-healing process. Improper wound care treatment based on poor wound documentation can also drive-up wound care costs and lead to litigation, which also drives up healthcare costs.

According to Nussbaum et al. (2018), Medicare spends between $28,000,000,000–$96,000,000,000 annually on wounds, with nonhospital settings costing the highest. Home health agencies are estimated at over $3,000,000,000. The average cost per individual Medicare beneficiary per wound ranges from $3,400–$12,000 depending on the wound type. Wound care is the highest reimbursed clinical grouping under the Patient-Driven Groupings Model for Medicare reimbursement in HHC, which is calculated using the clinician's documentation (CMS, 2023, July). Unfortunately, wound care is also highly litigious. There are approximately 17,000 lawsuits annually for PUs, with an average wound care litigation payout of $250,000 (Doyle, 2021). Halpern and Ravitz (2017) reviewed 23 litigation cases against wound care providers. The most common allegation against wound care providers was the failure to properly diagnose a wound, which resulted in an adverse event such as infection, sepsis, or amputation. Determining etiology when deciding the treatment that is most likely to heal a wound cannot be overstated. Halpern and Ravitz also found that inadequate records contributed to the plaintiff winning the case. Inadequate documentation undermines the provider's ability to prove that the patient received competent care and that neither negligence nor malfeasance contributed to the adverse outcome.

The CMS Home Health Quality Reporting Outcome Measure related to wounds is the "Percentage of quality episodes in which the patient has one or more Stage 2-4 pressure ulcers, or an unstageable ulcer, present at discharge that are new or worsened since the beginning of the quality episode" (CMS, 2023, February). The national observed value was 0.3%. The HHA in Southeast Florida's observed value was double the observed national value at 0.6%.

During their Accreditation Commission for Health Care (ACHC) accreditation survey, the HHA was cited for not communicating with the physician and the home health aides not following the written care plan. These are functions that fall within the area of coordination of care. The HHA was required to implement a plan of correction.

A retrospective chart audit was conducted at the HHA in Southeast Florida. The chart audit revealed that 75% of the medical records had incorrect wound classifications, 60% lacked documented coordination of care related to wound management, and 100% of wound documentation showed some knowledge gap in wound description, type, and etiology. Based on these findings, The Center for Home Health Excellence (TCHHE) identified wound care documentation as a weak area with a significant impact on patient outcomes, patient quality of life, cost, and reimbursement that can be addressed with a formal online education module on wound documentation.

Problem Statement

On average, 30% of home health patients have a wound. Home health nurses must have the knowledge to care for this patient population. There is a difference in managing disease processes in the hospital and the home and additional environmental factors to consider when in the home. Coordination of care is critical, and inaccurate wound documentation can impact the ability to establish the best treatment options and overall wound-healing process (Coleman et al.,

2017). Improper wound care treatment based on poor wound documentation can lead to poor patient outcomes, drive up wound care costs, and survey citations.

Clinical Question

The PICO question was as follows: Does formal online education on wound documentation result in improved documentation for the coordination of care among patients receiving wound care in the home health setting?

The patient population for this project was patients receiving HHC through a home health agency (HHA) in Southeast Florida with a primary or secondary diagnosis of a PU, lower extremity wound, venous stasis ulcer, arterial ulcer, or diabetic foot ulcer. Patients with an infected wound were excluded due to the infection prolonging the healing process. Patients with a cancer diagnosis were excluded due to the patients' unavoidable deterioration.

The intervention was formal online education modules on wound documentation for home health nurses who perform wound care. TCHHE provided the education modules created using the expertise of a certified wound, ostomy, and continence nurse (WOCN) and externally reviewed by a certified WOCN nurse practitioner. The modules included a discussion on the types of wounds, staging PUs, wound assessment, documentation guidelines, signs and symptoms of infection, creating the plan of care, and coordination of care.

There was no comparison intervention, as the HHA participating in the project does not have a wound education program; however, they conduct short training sessions during staff meetings.

The outcomes to be evaluated were (a) the percent change in the home health nurses' wound documentation knowledge measured through a pre and posttest; (b) improved documentation efficacy and coordination of care measured through a pre and post education

chart audit that looked at proper wound classification and management, PU prevention and relief, matching treatment orders vs. the treatment provided, coordination with wound management, and wound outcomes; (c) improved patient outcomes measured through a decrease in the average length of stay (ALOS) for home health patients receiving wound care; (d) a decrease in the CMS Home Health Quality Reporting Outcome Measure related to wounds, "Percentage of quality episodes in which the patient has one or more Stage 2-4 pressure ulcers, or an unstageable ulcer, present at discharge that are new or worsened since the beginning of the quality episode" (CMS, 2023, February); and, (e) post education satisfaction with the wound documentation modules.

Purpose of Project

The purpose of this project was to create, implement, and evaluate the effectiveness of formal online wound documentation modules for home health nurses at a HHA in Southeast Florida in improving wound documentation for the coordination of care, thereby improving patient outcomes.

Review of Literature

Search Strategy

An exhaustive review of the literature was conducted to support this doctor of nursing practice (DNP) project. This review included peer-reviewed articles published between 2016 and 2023. The literature search included the following databases: Cumulative Index of Nursing and Allied Health Literature, PubMed, MEDLINE, and Google Scholar. The search was limited to the English language, scholarly (peer-reviewed) journals, and linked full text. The keywords used included: wound documentation, inaccurate wound documentation, improving nursing documentation, coordination of care home health, the importance of care coordination, impact of care coordination on patient outcomes, effectiveness of online education, and effectiveness of online CE in healthcare.

The search resulted in 253 articles. After abstract reviews, critical appraisal, and omission of duplicate articles, 14 articles were included in the review. Three primary themes were identified: wound documentation inaccuracies, the importance of care coordination, and the effectiveness of online education, including online education for CE. The clinical question explored was, “Does formal online education on wound documentation result in improved documentation for the coordination of care among patients receiving wound care in the home health setting, resulting in improved patient outcomes?”

Synthesis of Evidence

Wound Documentation Inaccuracies

Proper wound documentation is a critical part of the day-to-day operations in most healthcare settings. Accurate wound documentation is essential for effective wound care,

facilitating care continuity, healing, proper coding, and reimbursement. Gaps in knowledge related to wound documentation can be closed by increasing nurses' knowledge of wounds.

Chupp and Edhayan (2018) conducted a quantitative comparative record review of operative reports. Preintervention, 300 general surgery and trauma cases for proper surgical wound classification (SWC) were reviewed, resulting in a 23% error rate. The purpose of this study was to improve the accuracy of the hospital's documented surgical wound class. After implementing a wound class algorithm for reference in the surgical suites and providing education on SWC, the postintervention record review of 483 cases for proper surgical classification error rate decreased to 16%, concluding the intervention resulted in a significant improvement ($p = 0.016$) in the overall accuracy of SWC. Specifically, Colectomy ($p < 0.001$) and appendectomy ($p = 0.001$) cases demonstrated significantly improved consistency. Wound class consistency decreased for the cholecystectomy subgroup but was not statistically significant ($p = 0.066$).

Gonzalez (2017) conducted a qualitative study comparing 10 students' and 10 staff nurses' PU documentation to a wound expert's PU documentation. The purpose of this study was to evaluate if using PU training for student nurses would enable them to provide a more effective assessment and measurement of PU compared to staff nurses. Gonzalez's study showed a significant difference ($p = 0.02$) between the student nurses' PU documentation matching the wound expert's documentation and the staff nurses' documentation. There was no statistical significance ($p = 0.32$) difference in the scores provided by nursing students and the wound care expert indicated. There was a statistically significant ($p = 0.01$) difference in the scores provided by staff nurses and the wound care expert indicated. Based on these findings, Gonzalez

concluded that CE beyond nursing school and the need to maintain and improve nurses' knowledge and skill sets are needed.

Nisman (2021) conducted a mixed-methods study that included testing a brief online educational intervention using a pre and postintervention questionnaire and qualitative evaluation via semi structured interviews. The purpose of this study was to develop a sustainable program across the health system to achieve and maintain the accuracy and integrity of SWC. Ten operating room (OR) nurses were asked to provide feedback on their perceptions of surgical wound inconsistencies and possible solutions. The nurses identified a need for more resources, such as education and a decision tree, and surgeon communication. Nisman then conducted a record review of 10 cases deemed high-risk. The error rate for SWC preintervention was 20%. A reference tool was created in the electronic health record (EHR), annual training was created for OR nurses on SWC, and debriefings with the surgical team postoperatively were implemented. Postintervention, 107 high-risk cases were reviewed, resulting in a decrease in the error rate to 13%. The intervention resulted in a significant ($p = 0.016$) improvement in the overall accuracy of SWC.

Hansen and Fossum (2016) conducted a cross-sectional descriptive design comparing retrospective audits of nursing documentation with patient examinations conducted in nursing homes. The purpose of this study was to describe the accuracy and quality of nursing documentation of PUs. They looked at the accuracy and quality of nursing documentation related to PUs by comparing nursing documentation on PUs and preventative interventions to the patient exam. One hundred fifty-five patient records were compared to the patient physical exam. The prevalence (p %) of PUs in nursing home patients was estimated at the 95% confidence interval (95% CI) of the proportion of patients with PU based on the patient exams and compared to the

corresponding estimation of the prevalence based on the nursing documentation. The discrepancy in the proportional findings of within-patient differences between the patient exam and the nursing documentation was evaluated by sets of paired data and expressed as the paired proportion of patients (p%; 95% CI) with missing nursing documentation in relation to the patient examination or vice versa. Hanson and Fossum found significant (25%; 95% CI; 19–32%) discrepancies between the patient exam and the nursing documentation, ranging from 30% to 60%, depending on the specific item reviewed. Hansen and Fossom identified a gap between nursing documentation and nursing practice and concluded that nurses need education and training on PU prevention and accurate documentation.

Chavez et al. (2019) conducted a cross-sectional quality improvement project using a qualitative interview approach. The purpose of this study was to identify barriers and facilitators when conducting and documenting daily comprehensive skin assessments. They created two focus groups of 62 nurses on medical-surgical and critical care units from 31 geographically diverse high-reassessment units and low-reassessment units, asking what they felt were barriers and facilitators to documenting their daily comprehensive skin assessments. The main barriers identified by the nurses in Chavez et al.'s study were lack of knowledge, staffing issues, and poor templates. They found having processes and a documentation template to be facilitators.

The topic of wound documentation in the home health setting is poorly documented in the literature; however, there are similarities in other care settings. The classification of surgical wounds can be equated to the classification of wounds in general in the home health setting. PUs are a common diagnosis in the home health setting and a diagnosis of focus for this DNP project. The studies discussed here showcase the issue of inaccurate wound documentation related to a

knowledge gap in wound classification and wound type, description, and etiology, which can be closed with education and training.

Table 1

Literature Review Table: Wound Documentation

Author/title/ year	Purpose	Design/methods	Key findings	Level of evidence
Chavez et al. *Pressure Injury Documentation Practices in the Department of Veteran Affairs: A Quality Improvement Project.* 2019	The purpose of this study was to identify barriers and facilitators when conducting and documenting daily comprehensive skin assessments.	A cross-sectional quality improvement project using a qualitative interview approach. Sample: 62 medical-surgical and critical care unit nurses from 31 geographically diverse high-reassessment and low-reassessment units.	Main barriers to accurate documentation were poor templates, staffing issues, and a lack of knowledge. Main facilitators were a documentation template and an internal data validation process.	III
Chupp & Edhayan. *An effort to improve the accuracy of documented surgical wound classification.* 2018	The purpose of this study was to improve the accuracy of the hospital's documented surgical wound class.	Quantitative comparative record review of operative reports. Sample: 300 preintervention and 483 postintervention general surgery and trauma cases covered by general surgery residents at St. John Hospital & Medical Center in Detroit, Michigan.	Colectomy ($p < 0.001$) and appendectomy ($p = 0.001$) cases demonstrated significantly improved consistency. Wound class consistency decreased for the cholecystectomy subgroup but was not statistically significant ($p = 0.066$). The algorithm and education resulted in a significant improvement in the overall accuracy of the documented surgical wound classes ($p = 0.016$).	III

Author/title/ year	Purpose	Design/methods	Key findings	Level of evidence
Hansen & Fossum. *Nursing documentation of pressure ulcers in nursing homes: Comparison of record content and patient examinations.* 2016	The purpose of this study was to describe the accuracy and quality of nursing documentation of pressure ulcers.	Cross-sectional descriptive design comparing retrospective audits of nursing documentation to patient examinations. Sample: 155 patients' records and patient examinations in five nursing homes from three municipalities in southern Norway throughout January–February 2013.	The patient records lacked information about pressure ulcers and preventive interventions when comparing the patient examinations with the patient record contents. Inaccuracies were found in the nursing documentation (25%; 95% CI; 19–32%). There is a gap between nursing practice and nursing documentation. Nurses need training and education to perform high-quality pressure ulcer prevention and complete, accurate nursing documentation.	IV
Gonzalez. *Pilot study to evaluate clinical education as a means to improve pressure ulcer documentation by hospital staff nurses*. 2017	The purpose of this study was to evaluate if using pressure ulcer training for student nurses would enable them to provide a more effective assessment and measurement of pressure ulcers compared to staff nurses.	Qualitative study comparing nursing documentation between student and staff nurses with assessments made by a wound care expert. Sample: 10 student nurses and 10 staff nurses were assigned to evaluate 10 patients with pressure ulcers.	Staff nurse PUSH scores were significantly ($p = 0.02$) different from student nurses and the wound care expert. There were no statistically significant ($p = 0.32$) differences in the scores provided by nursing students and the wound care expert indicated. There were statistically significant ($p = 0.01$) differences in the scores provided by staff nurses and the wound care expert indicated. Continuing education beyond nursing school and maintaining and improving nurses' knowledge and skill sets are needed.	IV

Author/title/ year	Purpose	Design/methods	Key findings	Level of evidence
Nisman. *Improving the accuracy of surgical wound classification documentation*. 2021	The purpose of this study was to develop a sustainable program across the health system to achieve and maintain the accuracy and integrity of SWC.	Mixed-methods pilot study that included testing of a brief online educational intervention through pre and postintervention questionnaires and qualitative evaluation via semi structured interviews Sample: 10 experienced OR nurses who provided feedback via a questionnaire about the SWC inconsistencies and possible solutions. Review of 10 surgical records linked to cases with a greater risk of inconsistency. Postintervention, 107 surgical cases were reviewed.	Factors contributing to SWC inconsistencies included a lack of resources and communication with the surgeons. After implementing an SWC reference tool in the EHR, annual OR nurse education on SWC, and postoperative debriefings, a large-scale health record review was conducted. The SWC inconsistency rate decreased from 20% to 13% ($p = 0.016$). The OR nurses had high satisfaction with the EHR reference tool.	III

Note. EHR =Electronic health record; PUSH = Pressure ulcer scale for healing; OR = Operating room; SWC = Surgical wound classification.

Importance of Care Coordination

According to the Agency for Healthcare Research and Quality (2018), care coordination is arranging patient care activities and sharing information among all members of the patient's care team to attain safer and more effective care. In the HHC setting, the patient may have several members on their home health team besides the patient and caregiver, nurse, and physician. Coordination of care becomes critical with many people in and out of the patient's home.

Sterling et al. (2022) conducted a cross-sectional study using data previously collected from the Reasons for Geographic and Racial Differences in Stroke study, which includes a care coordination survey and in-home visits to examine the association of HHC and perceived gaps in

care coordination and preventable adverse outcomes among Medicare beneficiaries. Surveys were sent to 4,296 Medicare beneficiaries, asking about their perceptions of care coordination and adverse outcomes. Four hundred thirty (10%) of the participants received HHC. Those beneficiaries receiving home health services reported that when they went to see their physician, the physician rarely had records of the home health services they were receiving. Still, they did not identify this as a gap in care coordination. HHC was not associated with differences in self-reported gaps in care coordination (33% HHV vs. 32.5% no HHC, $p = 0.70$). HHC recipients reported more preventable drug–drug interactions, but not more preventable emergency room visits or hospital admissions (9.1% HHC vs. 4%, $p = < 0.001$). Beneficiaries receiving HHC reported more adverse events than those not receiving HHC services ($p = <0.001$). Using an Inverse probability weights adjusted model, Sterling et al. concluded that HHC was not associated with gaps in care coordination but with an increased risk of preventable adverse outcomes ($p = <0.001$).

Leff et al. (2022) conducted a randomized quantitative study to determine issues related to how skilled HHA clinicians communicate with physicians. They mailed surveys to 1,000 Medicare-certified home health agencies asking how they communicated with physicians. They received a total of 265 completed surveys (26.5%). The most common communication method was via telephone, with over 40% of the agencies responding that they were never or rarely able to reach the physician. Leff et al. found that home health clinicians experienced significant barriers to communicating with physicians. They developed an adjusted multilevel logistic regression model for start of care and routine visits to look at patient outcomes. For start of care visits, no factors were associated with adverse patient outcomes and physician communication. For routine visits, clinicians who could reach a physician nearly every time or always, the odds

ratio for a clinician sending someone to the emergency department (ED) was 3.66 (95% CI 1.16, 11.5) for clinicians who could reach physicians sometimes or often, and 5.43 (95% CI 1.56, 18.9) for those who could reach a physician never or rarely. The odds ratio for orders being delayed after failed communication was 3.25 (95% CI 1.37, 7.71) for clinicians who could reach physicians sometimes or often and 3.19 (95% CI 1.31, 7.79) for those who could reach a physician never or rarely. This regression analysis concluded that poor communication is associated with adverse patient outcomes.

Jones et al. (2017) conducted a descriptive qualitative study with six focus groups of HHC nurses and staff (n = 56) from six agencies in Colorado. The focus groups' conversations were recorded, transcribed, then analyzed using a mixed deductive/inductive method to identify themes. Six focus groups of 56 HHC nurses and staff were asked about their perception of care coordination in the home health setting. The purpose of this study was to describe HHC nurse perspectives on the challenges and possible solutions to the coordination of care for recently discharged patients. Using ATLAS.ti to help uncover actionable insights, five challenges were identified, including communication and safety. Jones et al. concluded that solutions must be found to improve care coordination in the home health setting due to the potential adverse effect on patient outcomes.

The topic of coordination of care, as it is called in the home health industry, is poorly documented in the literature. Most of the articles found for the home health setting pertained to care coordination during the transition of care from the hospital to home health services. Two studies identified communication barriers and two identified adverse patient outcomes related to poor communication. Communication amongst the care team is critical in the HHC setting with

many people in and out of the patient's home to ensure proper care and positive patient outcomes.

Table 2

Literature Review Table: Care Coordination

Author/title/ year	Purpose	Design/methods	Key findings	Level of evidence
Jones et al. *"Connecting the Dots": A Qualitative Study of Home Health Nurse Perspectives on Coordinating Care for Recently Discharged Patients*. 2017	The purpose of this study was to describe HHC nurse perspectives on the challenges and possible solutions to the coordination of care for recently discharged patients.	Descriptive qualitative study with six focus groups of HHC nurses and staff. Focus group conversations were recorded, transcribed, then analyzed using a mixed deductive/inductive method to identify themes. Sample: Six focus groups of HHC nurses and staff (n = 56) from six agencies in Colorado.	HHC nurses described challenges and solutions within the domains of communication, accountability, assessing needs and goals, safety, and medication management. In the age of shared accountability for patient outcomes, solutions for improving care coordination in the home health setting are needed.	VII

Author/title/ year	Purpose	Design/methods	Key findings	Level of evidence
Leff et al. *Skilled home healthcare clinicians' experiences in communicating with physicians: A national survey*. 2022	The purpose of this study was to determine issues related to how skilled HHA clinicians communicate with physicians.	Randomized quantitative study. Surveys were mailed to a national representative random sample of HHC agencies. The survey measured the experiences of HHC clinicians in communicating with physicians. Multilevel logistic regression models examining odds of adverse patient outcomes associated with communication failures. Sample: Mailed 1,000 surveys with 265 surveys from 168 Medicare-certified home health agencies being returned (26.5%).	The most common method of contacting physicians during routine visits was by telephone; communication via the electronic health record was uncommon. Approximately 40% of clinicians report never or rarely being able to reach a physician. No factors were associated with adverse patient outcomes and physician communication for SOC visits. For routine visits, clinicians who could reach a physician nearly every time or always, the odds ratio for a clinician sending someone to the emergency department was 3.66 (95% CI 1.16, 11.5) for clinicians who could reach physicians sometimes or often, and 5.43 (95% CI 1.56, 18.9) for those who could reach a physician never or rarely. The odds ratio for orders being delayed after failed communication was 3.25 (95% CI 1.37, 7.71) for clinicians who could reach physicians sometimes or often and 3.19 (95% CI 1.31, 7.79) for those who could reach a physician never or rarely. HHC clinicians commonly experience significant barriers to communication with physicians, which are associated with adverse patient outcomes.	VI

Author/title/ year	Purpose	Design/methods	Key findings	Level of evidence
Sterling et al. *Self-reported gaps in care coordination and preventable adverse outcomes among older adults receiving home health care*. 2022	The purpose of this study was to examine the association between HHC and perceived gaps in care coordination and preventable adverse outcomes among Medicare beneficiaries.	Cross-sectional study using data previously collected from the REGARDS study, which includes a care coordination survey and in-home visits. Sample: 4,296 Medicare beneficiaries from the REGARDS study who completed a survey on care coordination from 2017 to 2018. The association between the receipt of HHC and two outcomes was examined.	430 (10%) participants received HHC. They were older and had more comorbidities and ambulatory visits than those without HHC. HHC was not associated with differences in self-reported gaps in care coordination (33% HHC vs. 32.5% no HHC, p = 0.70). HHC recipients reported more preventable drug–drug interactions but not more preventable emergency department visits or hospital admissions (9.1% HHC vs. 4%, p= <0.001). In IPW-adjusted models, HHC was not associated with gaps in care coordination but with double the risk of a preventable adverse outcome (p=0.60). HHC recipients were significantly more likely to report a potentially preventable adverse event, suggesting it is important to leverage their observations to improve patient safety (p = <0.001).	IV

Note. HHC = Home health care; IPW = Inverse probability weights; REGARDS = Reasons for Geographic and Racial Differences in Stroke; SOC = Start of care.

Effectiveness of Online Education

Ayello et al. (2017) conducted a systematic review of 50 articles to identify the current state of educating nurses on wound care and pressure injuries. The results of their review validate that nursing education must incorporate evidence-based practice that includes an interactive

longitudinal curriculum. The basic knowledge nurses receive on wound care in nursing school must be supplemented by clinical experience, where pressure injury prevention and management can be associated with patient outcomes and quality measures. Linking formative and CE to both patient and organizational outcomes can be used to measure the education's effectiveness. Although nursing has traditionally been associated with pressure injury management, there is an increasing need for interprofessional education (IPE) and care when it comes to pressure injury prevention and management.

This review concluded that although competency assessment is important, it must be accompanied by CE. Ayello et al. (2017) proposed several education strategies including readings, pre and posttests, discussions, vignettes, progressive patient problems, and question cards. The overall conclusion was that the basic wound knowledge nurses learn in school must be built on through CE that must be outside the classroom through online interactive education modules or mobile apps.

Liaw et al. (2017) conducted a randomized controlled trial with a pretest-posttest design study to evaluate the effectiveness of web-based education programs on nurses' knowledge and skills in identifying and managing patients who are deteriorating. Sixty-four nurses were randomly placed into either the experimental or control group. The experimental group participated in the web-based education, which consisted of an 11-minute animated video followed by instructional materials on managing and reporting patient deterioration and virtual simulation scenarios. Following the intervention, the experimental group demonstrated a significant increase ($p = <0.001$) in posttest scores compared to pretest scores. No significant improvement ($p = 0.75$) was found between the control group's pretest and posttest mean scores. Liaw et al. concluded that the web-based educational intervention significantly improved the

nurses' knowledge in recognizing and managing a deteriorating patient. This study was included as it shows that web-based education is successful and that being able to identify a deteriorating patient is a skill set that is transferable to the home health setting in general and in identifying a wound that is not healing or getting worse.

Lim and Yi (2021) conducted a randomized control trial to evaluate the effectiveness of web-based education programs on nurses' knowledge of legal obligations and patient safety. One hundred-eighteen nurses were randomly assigned to the intervention or control group. The intervention group participated in web-based education, which consisted of nine modules varying in length from 10 minutes to 20 minutes over 5 weeks. The modules contained theoretical knowledge and the analysis of medical malpractice cases. There was a significant difference in knowledge ($p = 0.004$) and cognition ($p = 0.021$) of legal obligations, patient safety competency ($p = 0.043$), and patient safety knowledge ($p = 0.011$) between the control and intervention groups after the 5-week intervention. Lim and Yi concluded that the web-based education program on medical malpractice cases improved nurses' awareness of legal obligations and patient safety competency.

Goudy-Egger and Dunn (2018) conducted a mixed methods study using pre and posttests to determine if nurses' knowledge of chronic wound management would improve after receiving education using evidence-based practices. Thirty-one nurses in home health agencies and long-term facilities participated in the education intervention. The educational intervention was an all-day, in-person workshop that included a PowerPoint presentation on the skin and wound basics, discussions on evidence-based chronic wound care practice guidelines, and wound management concepts and principles. Though this was in-person education, similar content was included in the project's online education intervention. Goudy-Egger and Dunn found a significant

improvement in the nurses' knowledge, with the mean score on the pretest being 13.48 and, on the posttest, the mean was 16.03; $p = 0.05$. Their findings support the need for CE on chronic wound management.

Donahue et al. (2019) conducted a quantitative study using pre and postsurvey data from 75 ED personnel to determine the learning needs and effectiveness of online education modules on identifying human trafficking victims. The ED personnel completed the online education modules consisting of PowerPoint presentations, treatment guidelines, and case studies. This is the same format as the online education intervention for this DNP project. ED personnel reported an increase in their confidence levels in identifying victims of human trafficking from 40% to 70% and an increase in their confidence in treating victims of human trafficking from 40% to 80%. Most (96%) participants reported that they found the education module useful. Donahue et al. concluded that the mixed method online training module was effective.

Krnic et al. (2022) conducted a mixed methods pilot study of online education modules on how to conduct systemic reviews to assess the effectiveness of online education modules. Eleven nurses and one radiology technician completed the 11 2-minute online modules. Participants showed a 20% increase in correct answers between the pre and posttest. Overall, 83% of the participants provided positive feedback on the online education method and the length of the modules. Krnic et al. concluded that online education modules could be effective in improving participants' knowledge. The online education intervention for this DNP project was two modules of 1-hour each. Education in shorter lengths is more effective than longer courses (Krnic et al., 2022).

Although there is limited literature related explicitly to wounds and wound documentation in the HHC setting, the literature review provided compelling evidence that there

is a knowledge gap among nurses regarding wounds and wound documentation that can be closed with formal online education modules. The literature also showed that improved patient outcomes could result from proper care coordination.

Table 3

Literature Review Table: Effectiveness of Formal Online Education

Author/title/ year	Purpose	Design/methods	Key findings	Level of evidence
Ayello et al. *Educating nurses in the United States about pressure injuries.* 2017	The purpose of this review was to identify the current state of educating nurses on wound care and pressure injuries.	Systematic review Sample: Review of 50 articles	Basic wound knowledge from school must be supplemented with clinical experience and continuing education. Linking professional development education to patient and organizational outcomes should be used to measure educational success. Pressure injury prevention and care must be interprofessional.	I
Donahue et al. *Educating emergency department staff on the identification and treatment of human trafficking victims.* 2019	The purpose of this study was to examine the effectiveness of an innovative, evidence-based online training module.	Quantitative study using a pre and postsurvey to determine the effectiveness of online education. The learning module consisted of a PowerPoint presentation, identification, treatment guidelines, and two case studies. Sample: ED personnel consisting of nurses, physicians, nurse practitioners/physician assistants, registration, and ED technicians in two suburban hospitals; 75 employees participated in the survey and education.	ED personnel reported an increase in their confidence levels in identifying victims of human trafficking from 40% to 70% and an increase in their confidence in treating victims of human trafficking from 40% to 80%. Most (96%) participants found the educational module useful. Donahue et al. concluded that the mixed method online training module was effective.	III

Author/title/ year	Purpose	Design/methods	Key findings	Level of evidence
Goudy-Egger & Dunn. *Use of continuing education to increase nurses' knowledge of chronic wound care management*. 2018	The purpose of this study was to determine whether nurses' knowledge regarding current chronic wound care management would differ after attending an educational workshop that emphasized evidence-based clinical practices in chronic wound management.	Mixed method study using pre and posttest data with a single survey asking participant about their views on wound care. Sample: Thirty-one RNs, LPNs, and APRNs from home health agencies and long-term care facilities in a metropolitan area in the Midwest of the United States working with or interested in chronic wound care.	Most nurses believed they were inadequately prepared to care for patients with chronic wounds. There was a statistically significant increase in nurses' knowledge found from pretest (M=13.48, SD=2.49) to posttest (M=16.03, SD=2.21; p=0.05). The findings support the need for continuing education regarding changes in chronic wound care management.	III
Krnic et al. *Creating an online educational intervention to improve knowledge about systematic reviews among healthcare workers: mixed-methods pilot study.* 2022	The purpose of this study was to conduct preliminary testing of short online education modules and collect the opinion of HCWs about the online educational intervention designed to improve their knowledge about SRs, the usefulness, applicability, and experience with the education.	Mixed methods pilot study testing newly designed 11 short online educational interventions with pre and postintervention questionnaires and a qualitative evaluation via semi structured interviews. Sample: 11 nurses and one radiology technician selected through a sampling among graduates of university-level health sciences studies nominated by their teachers.	All (100%) participants responded that the education modules changed their knowledge of SRs. Most (83%) participants said the education module method was appropriate for learning about SRs. All (100%) participants agreed that the duration of online education was appropriate.	III

Author/title/ year	Purpose	Design/methods	Key findings	Level of evidence
Liaw et al. *The impact of a Web-based educational program on the recognition and management of deteriorating patients.* 2017	The purpose of this study was to evaluate the effectiveness of web-based education programs on nurses' knowledge and skills in identifying and managing deteriorating patients.	A randomized controlled trial with a pretest-posttest design. Following a baseline evaluation, the experimental group received a web-based educational intervention. A pre and post assessment of skills and knowledge were performed with a simulated scenario and knowledge questionnaire. Sample: ENs with <5 years of nursing experience from an acute care tertiary hospital in Singapore. Sixty-four nurses completed the entire study. A computer-generated list of random numbers was used to allocate the participants to the experimental or control group.	The experimental group demonstrated a significant increase ($p = <0.001$) in posttest scores compared to pretest scores. No significant improvement ($p = 0.75$) was found between the control group's pretest and posttest mean scores. The web-based educational intervention significantly improved the nurses' knowledge in recognizing and managing a deteriorating patient.	II
Lim & Yi. *Effects of a web-based education program for nurses using medical malpractice cases: A randomized controlled trial.* 2021	The purpose of this study was to evaluate the effectiveness of web-based education programs on nurses' knowledge of legal obligations and patient safety.	Randomized controlled trial developed using the analysis-design-development-implementation-evaluation model. The intervention was a web-based education program administered over 5 weeks. The pretest was issued to the control and intervention groups before the education program and the posttest at the end of the 5-week education program to both groups. Sample: 118 nurses working in three hospitals randomly assigned to the intervention group (N = 59) or control group (N = 59).	There was a significant difference in knowledge ($p = 0.004$) and cognition ($p = 0.021$) of legal obligations, patient safety competency ($p = 0.043$), and patient safety knowledge ($p = 0.011$) between the control and intervention groups after the 5-week intervention. The web-based education program on medical malpractice cases enhanced the nurses' awareness of legal obligations and patient safety competency.	II

Note. APRN = Advanced practice registered nurse; ED = Emergency department; EN = Enrolled nurse (aka LPN);

HCW = Healthcare worker; LPN = Licensed practical nurse; RN = Registered nurse; SR = Systematic review.

Organizational Assessment

The Center for Home Health Excellence (TCHHE)

TCHHE promotes high-quality and safe patient care that can be monitored through data-driven outcomes. TCHHE provides training around clinical competency, quality, compliance, and documentation to home health clinicians (primarily registered nurses (RNs)) with the following goals in mind:

1. Elevate the standards of practice for home health care delivery.
2. Improve patient outcomes.
3. Standardize care delivery.
4. Promote home health as a specialty area in nursing.

TCHHE's director has been an RN for 30 years. The director holds a Juris Doctor degree, is a certified WOCN, holds multiple certifications in compliance, and is certified in OASIS-E, a comprehensive home health assessment tool. Having someone with these credentials and length of experience is a huge facilitator for this project.

Home Health Agency (HHA) in Southeast Florida

The HHA in Southeast Florida is a for-profit Medicare-certified HHA that provides nursing care, physical therapy, occupational therapy, speech therapy, medical social, home health aide, and dietician services in Medicare beneficiary homes based on Medicare's home health service eligibility criteria. They are accredited by ACHC. During the organizational assessment, there were 17 RNs, 10 licensed practical nurses (LPNs), and one advanced practice RN working full-time, part-time, or per diem at the HHA.

The HHA had an average daily census of 76 patients and an ALOS of 61 days. Over half (62.5%) of the patients were 85+ years old, with 17% of patients having a diagnosis related to a

wound. The ALOS of patients with a wound was 75 days. The *British Journal of Nursing* states that most uncomplicated wounds can be healed within 10 days if treated correctly (Edwards-Jones, 2020).

Based on a retrospective chart audit at the HHA in Southeast Florida, 75% of the medical records had incorrect wound classifications, 60% lacked documented coordination of care related to wound management, and 100% of wound documentation showed some knowledge gap in wound description, type, and etiology.

During its ACHC accreditation survey, the HHA was cited for not communicating with the physician and the home health aides not following the written care plan. These are functions that fall within the area of coordination of care. The HHA was required to implement a plan of correction. The ACHC-approved plan of correction included mandatory staff education on these topics and chart audits to monitor compliance with the cited standards.

Conceptual and Theoretical Framework

Theoretical Framework

Kurt Lewin's change theory guided this project's intervention to increase home health nurses' knowledge of wound documentation and coordination of care. Lewin's theory consists of three stages for change: unfreezing, change, and refreezing (Hussain et al., 2018). The first stage (unfreezing) refers to assessing the current state of the issue and increasing the driving forces for change. For this DNP project, the unfreeze stage involved identifying a need for change through CMS national data, accreditation survey results, and chart audits.

The CMS Home Health Quality Reporting Outcome Measure related to wounds is the "Percentage of quality episodes in which the patient has one or more Stage 2-4 pressure ulcers, or an unstageable ulcer, present at discharge that are new or worsened since the beginning of the quality episode" (CMS, 2023, February). The national observed value was 0.3%. The HHA in Southeast Florida's observed value was double the observed national value at 0.6%. During its ACHC accreditation survey, the HHA was cited for not communicating with the physician and the home health aides not following the written care plan. These are functions that fall within the area of coordination of care. The HHA was required to implement a plan of correction. A retrospective chart audit was conducted at a HHA in Southeast Florida. The chart audit revealed that 75% of the medical records had incorrect wound classifications, 60% lacked documented coordination of care related to wound management, and 100% of wound documentation showed some knowledge gap in wound description, type, and etiology.

The second stage of Lewin's change theory (change) refers to implementing change to modify behaviors, thoughts, feelings, or all three (Petiprin, n.d.). The change stage in this project was the implementation of an evidence-based formal online education program consisting of two

1-hour modules on wound documentation for the coordination of care for home health nurses at a HHA in Southeast Florida. TCHHE provided the online education modules created using the expertise of a certified WOCN. The modules included a discussion on the types of wounds, staging PUs, wound assessment, documentation guidelines, signs and symptoms of infection, creating the plan of care, and coordination of care. The patient population for this project was patients receiving HHC through the HHA in Southeast Florida with a primary or secondary PU diagnosis, lower extremity wound, venous stasis ulcer, arterial ulcer, or diabetic foot ulcer. Patients with a cancer diagnosis were excluded due to the patients' unavoidable deterioration.

The third step (refreezing) is establishing the change as a standardized process. The refreezing stage of this project included identifying change sustainability by assessing facilitators for and barriers to the change. This included annual wound documentation education and ongoing wound documentation chart audits.

Conceptual Framework

The American Nurses Credentialing Center (ANCC) Accreditation Program is committed to providing excellence in the lifelong learning needs of professional nurses. Through evidence-based criteria and standards, the program ensures that educational activities are designed to meet the highest quality standards for nursing continuing professional development (NCPD). The program also provides guidance and resources to ensure educational activities are designed with these criteria in mind. Through this commitment, the ANCC Accreditation Program is helping to ensure that nurses receive the best possible education and training available (ANCC, 2023).

TCHHE intends to seek accreditation as an accredited provider through ANCC's NCPD Accredited Provider Program to be able to offer CE credit for the online education modules it provides in the future. Therefore, the DNP educational project was developed following the

ANCC Primary Accreditation conceptual framework educational design process (EDP) criteria. The ANCC Primary Accreditation conceptual framework follows the Donabedian model of three pillars: structure, process, and outcomes. ANCC's accreditation program consists of three domains:

1. Structural Capacity: Structural capacity is an important concept that helps organizations evaluate their infrastructure and capacity to function as an accredited provider. Structural capacity involves comprehensively assessing the organization's resources, processes, and practices. This evaluation helps organizations identify potential areas for improvement and develop strategies for better performance. Structural capacity enables organizations to identify their strengths and weaknesses to optimize their operations. It also provides a framework for assessing the organization's ability to meet the requirements of accreditation standards. Through this evaluation process, organizations can develop strategies that will ensure they are meeting all applicable standards while maintaining a high level of quality in their services.
2. Educational Design Process – The EDP is an important domain to ensure the quality of educational planning, implementation, and evaluation. The EDP is a systematic approach to creating learning experiences tailored to meet learners' needs. It includes analyzing the learning objectives, creating a curriculum plan, assessing student progress, and evaluating the program's overall effectiveness.
3. Quality Outcomes: The quality of outcomes associated with NCPD can be used to evaluate its impact on professional practice and patient outcomes. By measuring these outcomes, we can determine how effective NCPD is at improving patient care and helping nurses stay current in their field. These data can then be used to improve existing

NCPD programs and develop new ones that are more effective at meeting the needs of both patients and nurses.

The DNP educational project was developed following the ANCC Accredited Provider EDP. The ANCC EDP entails the following steps:

- Identifying the professional practice gap: The need for education on wound documentation and coordination of care was validated during a preintervention chart audit and synthesis of evidence.
- Convening a planning committee: The committee must consist of at least two members. The planning committee for this activity included the DNP student and practice mentor.
- Identifying the underlying educational need(s): The underlying educational need was identified as knowledge based on the preintervention chart audit, the synthesis of internal evidence, and the HHA organizational assessment.
- Identifying the target audience: The target audience was home health nurses, RNs, LPNs, and advance practice RNs who work at the HHA in Southeast Florida.
- Developing the learning outcomes: The learning outcomes for the online education modules are as follows. By the end of the modules, the learner will be able to: (a) identify wound etiology and type, (b) distinguish the different stages of PUs, (c) identify the signs and symptoms of infection, (d) list the steps to assess a wound, (e) complete a wound care plan based on wound type, (f) list all the required components of wound documentation, and (g) recognize how wound documentation impacts the coordination of care.
- Creating the content for the educational activity based on the best available evidence: Content for the online education modules was based on current evidence-based

guidelines by a WOCN-certified nurse and reviewed by an external WOCN-certified nurse practitioner whose feedback asked if nutrition, wound vacs, and skin grafts should be covered. Those topics lend themselves to separate modules in the future and were not a focus of this project.

- Including active learner engagement activities: The online education modules included a record presentation with wound images, embedded video, and case studies with questions.

Translation Model

The Iowa Model of Evidence-Based Practice to Promote Excellence in Health Care was used in developing the formal online wound documentation education modules. The Iowa Model was developed at the University of Iowa Hospitals and Clinics in the 1990s to guide nurses in using research findings to help improve patient care. The Iowa model consists of decision steps guiding nurses in moving from the identified trigger or opportunity to instituting a change in practice (Iowa Model Collaborative, 2017).

The Iowa Model's first step is identifying the triggers or opportunities. Internal data identified a clinical problem and knowledge gap in wound care documentation at the HHA in Southeast Florida. The CMS Home Health Quality Reporting Outcome Measure related to wounds is the “Percentage of quality episodes in which the patient has one or more Stage 2-4 pressure ulcers, or an unstageable ulcer, present at discharge that are new or worsened since the beginning of the quality episode” (CMS, 2023, February). The national observed value was 0.3%. The HHA in Southeast Florida’s observed value was double the observed national value at 0.6%. During its ACHC accreditation survey, the HHA was cited for not communicating with the physician and the home health aides not following the written care plan. These are functions that

fall within the area of coordination of care. The HHA was required to implement a plan of correction.

A retrospective chart audit was conducted at the HHA. The chart audit revealed that 75% of the medical records had incorrect wound classifications, 60% lacked documented coordination of care related to wound management, and 100% of wound documentation showed some knowledge gap in wound description, type, and etiology.

The next decision point in the Iowa Model is determining if the identified trigger is a priority for the organization and if there is sufficient evidence-based research. The HHA leadership saw the wound documentation knowledge gap as a priority. The synthesis of the literature on wound documentation practices validated a gap in knowledge regarding wound description, type, and etiology across all healthcare settings. The importance of care coordination was validated in the literature review, showing lack of communication with the care team leads to adverse patient outcomes. In the literature review, Donahue et al. (2019), Goudy-Egger and Dunn (2018), Krnic et al. (2022), Liaw et al. (2017), and Lim and Yi (2021) each validated the effectiveness of online education supporting the intervention of formal online education modules on wound documentation to improve the efficacy of wound documentation and coordination of care resulting in improved patient outcomes.

The final decision point in the Iowa Model is deciding if the recommended change is appropriate for adoption. The intervention was appropriate for adoption based on the facts that the modules were developed using evidence-based practices and included a discussion on the types of wounds, staging PUs, wound assessment, documentation guidelines, signs and symptoms of infection, creating the plan of care, and coordination of care. The online modality

made the modules easily accessible at any time and promoted sustainability due to the online modality and content being managed in-house.

Methodology

The purpose of this project was to create, implement, and evaluate formal online wound documentation modules for home health nurses at a HHA in Southeast Florida to improve wound documentation for the coordination of care, thereby improving patient outcomes. The online education modules focused on the types of wounds, staging PUs, wound assessment, documentation guidelines, signs and symptoms of infection, creating the plan of care, and coordination of care. Nurses were asked to complete a pre and posttest and a posteducation module evaluation.

Setting

The Center for Home Health Excellence

TCHHE is a national company based in Texas with two employees, a director, and a lead nurse planner. Currently, only organizations may use TCHHE services for education or chart reviews. TCHHE intends to be available to individual home health nurses when the home health certification program is complete and approved for CE credit and eventually as a specialized certification.

TCHHE uses subject matter experts and contractors as needed. TCHHE administered the intervention for the HHA in Southeast Florida. TCHHE provides training around clinical competency, quality, compliance, and documentation to home health clinicians (primarily RNs) with the following goals in mind:

1. Elevate the standards of practice for home health care delivery.
2. Improve patient outcomes.
3. Standardize care delivery.
4. Promote home health as a specialty area in nursing.

TCHHE used Kajabi, an online learning platform, to deliver the formal online education modules on wound documentation. The online platform is easy to implement and use and is available 24/7 for learners.

Home Health Agency in Southeast Florida

The intervention was implemented at a HHA in Southeast Florida through TCHHE. The HHA is a for-profit Medicare-certified HHA that provides nursing care, physical therapy, occupational therapy, speech therapy, medical social, home health aide, and dietician services in Medicare beneficiary homes based on Medicare's home health service eligibility criteria. The HHA is accredited by ACHC.

During the project's planning phase, there were 28 nurses on staff with the HHA: six full-time employees, 11 part-time employees, and 11 contracted per-diem staff. The HHA had an average daily census of 76 patients and an ALOS of 61 days. Over half (62.5%) of the patients were 85+ years old, with 17% of patients having a diagnosis related to a wound. The ALOS of patients with a wound was 75 days. The *British Journal of Nursing* states that most uncomplicated wounds can be healed within 10 days if treated correctly (Edwards-Jones, 2020).

Participants

The participants for this project included 13 RNs and one LPN working full-time, part-time, or per-diem at a HHA in Southeast Florida. Participation in the pre and posttest and the post education module evaluation was voluntary. Participation in the online education modules was mandatory per the HHA leadership. Mandatory participation was conveyed during the staff meeting on April 4, 2023, by the regional director of operations, where the DNP student introduced the DNP project.

Ethical Considerations

The HHA in Southeast Florida does not have an Institutional Review Board (IRB). A letter of support from the regional director of operations at the HHA is included in Appendix F. This DNP project was submitted to Rasmussen University's IRB for approval on March 19, 2023. Approval was received on March 30, 2023 (see Appendix A). After a call with Kajabi regarding account creation for the nurses and how to share the education modules with them, it was shared that an email address must be used to create an account in Kajabi. The Rasmussen IRB was informed of the change in the unique identifier process below.

During the on-site visit at the intervention site with the potential participants on April 4, 2023, the DNP student shared how anonymity and confidentiality would be maintained and provided the staff with a copy of the informed consent. When it was time to provide a demonstration on how to use Kajabi, the potential participants were instructed to create their account using a unique email and to use an unidentifiable email address that does not include their name to maintain anonymity (see Figure 1). The example given was the DNP student's email address: wdwfan20000@yahoo.com. The DNP student also explained that if they did not have an unidentifiable email address, one could be created using the first three letters of their mother's name and the last four digits of their mobile number through Yahoo, Gmail, and Hotmail, such as dia7483@gmail.com. Additionally, account creation instructions were added to the account creation page in Kajabi (see Figure 2). Every Saturday, the data were downloaded from Kajabi and reconciled. If a participant had used an identifiable email address, the email address was converted to a unique identifier in the data workbook using Nurse 1, Nurse 2, Nurse 3, etc., to maintain anonymity and confidentiality.

Figure 1

Account Creation Instructions

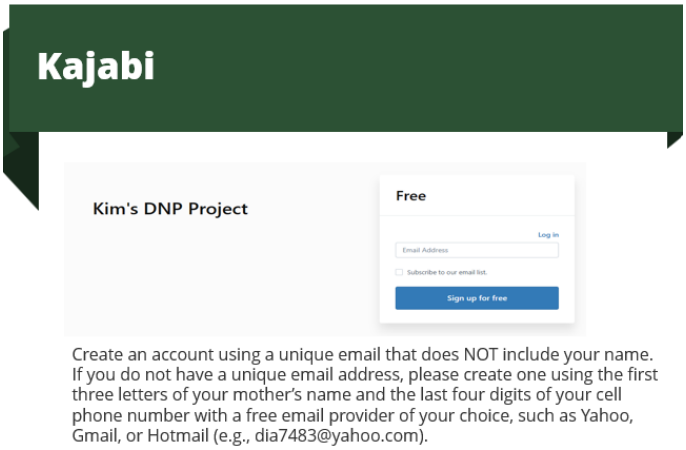
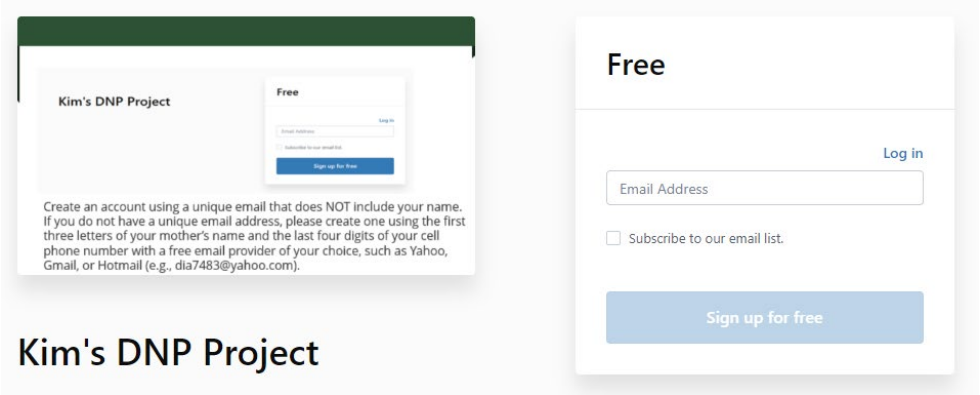


Figure 2

Account Creation Instructions in Kajabi



Informed Consent

Participation in the educational modules was mandatory per the HHA leadership. Participation in the pre and posttest and the module evaluation was voluntary. Nurses were informed of the DNP project and education modules at a staff meeting on April 4, 2023, by the DNP student. The DNP student attended the staff meeting in person, where the project was

reviewed following the information in the informed consent (see Appendix B). The DNP student shared and reviewed the informed consent form with the staff allowing for a question-and-answer session.

The informed consent was provided in the first step of the education modules and prior to the pretest. The informed consent included the project title and DNP student's name. There was an introduction explaining the purpose of informed consent. The DNP project's purpose was presented along with the procedure the participants would follow if they consented to participate. The benefits, risks, and discomforts to the participants were described, followed by how privacy, anonymity, and confidentiality were ensured. The DNP student's contact information was provided for questions. Lastly, because the informed consent was in Kajabi, there was a box at the bottom of the consent form for the participants to click if they agreed to participate in the project. There were also instructions on how to proceed if they did not consent to participate in the project's voluntary portion. Demographic and knowledge data were collected in the pretest, and knowledge data were collected in the posttest. The nurses entered their respective data voluntarily into the online education platform.

Beneficence

Nurses participating in the mandatory online education modules voluntarily participated in the pre and posttest and post education module evaluation without coercion or deception. There was no monetary compensation for participating in the project. The intervention did not require contact with home health patients; however, during the postintervention chart audit phase, the chart reviewer had access to protected health information; only the patient medical record number was used for data capture. The medical record number was used in case data reconciliation was needed, or the HHA requested specific details on a record reviewed.

Privacy, Anonymity, and Confidentiality

Patient privacy and confidentiality was maintained throughout the project under the Health Insurance Portability and Accountability Act of 1996 privacy rule. Names and details of patients were not recorded for this project. Data on the nurses for pre and posttest data comparison and the post education module evaluation were anonymous. The nurses were instructed to create their account using a unique email and asked to use an unidentifiable email address that did not include their name to maintain anonymity. They were also instructed that if they did not have an unidentifiable email address, one could be created using the first three letters of their mother's name and the last four digits of their mobile number through Yahoo, Gmail, and Hotmail. These instructions maintained anonymity and allowed for comparison via Kajabi, an online education platform. The results remained anonymous. Only the DNP student and practice mentor had access to the Kajabi account.

Confidentiality was ensured, and test results remained on Kajabi's password-protected server. Kajabi allows for the confidential and anonymous collection of information with guarantees of reliability and security as posted in their privacy policy statement (Kajabi, 2022).

All data were stored on an encrypted flash drive at the DNP student's home in a locked cabinet, where only the DNP student had possession of the key. After the DNP project is published in ProQuest, the flash drive will be deleted using a specialized data-erasing software program designed to remove sensitive data.

Intervention

The intervention consisted of two formal online education modules on wound documentation for home health nurses who perform wound care. TCHHE provided the online education modules created using the expertise of an internal certified WOCN and reviewed by an

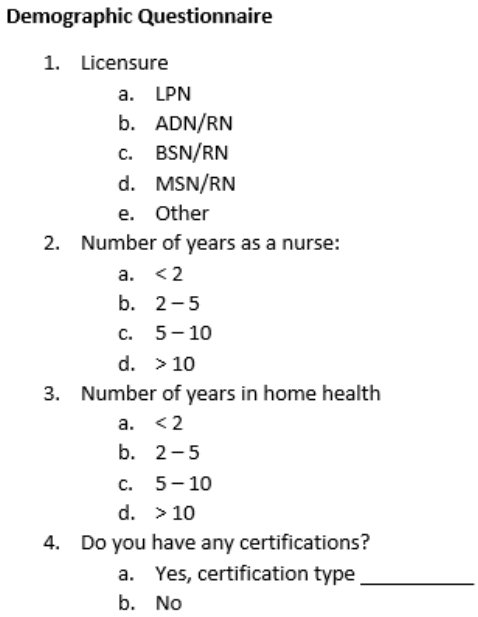
external WOCN-certified nurse practitioner for content validity. The modules included a discussion on the types of wounds, staging PUs, wound assessment, documentation guidelines, signs and symptoms of infection, creating the plan of care, and coordination of care. The module content was sent to the external WOCN reviewer on February 25, 2023, for review and feedback. Kajabi was used to administer the pre and posttests, view the education modules, and capture the participants' evaluations of the online education modules.

The director of TCHHE is a certified WOCN and guided the DNP student in the creation of the online education modules in Kajabi. The modules were 1-hour each. The first module covered wound assessment fundamentals (see Appendix C). The second module covered assessing and documenting wounds in home health (see Appendix D). Evidence-based guidelines were used to create the online education modules following the ANCC NCPD accredited provider EDP criteria to develop the modules.

The online education modules were expected to take 2.5 hours to complete. The participants were able to stop at any time and return to complete the modules. The pre and posttest were created using the modules' objectives as a guide. The pretest also included demographic questions (see Figure 3) on degree level, number of years as a nurse, number of years in home health, and type of certification, if any.

Figure 3

Demographic Questionnaire



Demographic Questionnaire

1. Licensure
    a. LPN
    b. ADN/RN
    c. BSN/RN
    d. MSN/RN
    e. Other
2. Number of years as a nurse:
    a. < 2
    b. 2 – 5
    c. 5 – 10
    d. > 10
3. Number of years in home health
    a. < 2
    b. 2 – 5
    c. 5 – 10
    d. > 10
4. Do you have any certifications?
    a. Yes, certification type _____
    b. No

The pre and posttest questions (see Appendix E) were the same and consisted of 20 questions covering both modules. The number of questions per objective can be found in the parentheses at the end of the objective: (a) identify wound etiology and type (four), (b) distinguish the different stages of PUs (three), (c) identify the signs and symptoms of infection (one), (d) list the steps to assess a wound (two), (e) complete a wound plan of care based on wound type (three), (f) list all the required components of wound documentation (three), and (g) recognize how wound documentation impacts the coordination of care (four).

The posteducation module evaluation (see Figure 4) was created using a 5-point Likert scale with the following ratings: *Strongly Agree* = 5, *Agree* = 4, *Neutral* =3, *Disagree* =2, and *Strongly Disagree* =1. The questions asked included the following:

Figure 4

Posteducation Module Evaluation

Questions	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
The modules covered all the objectives	☐	☐	☐	☐	☐
The organization and format of the modules facilitated learning.	☐	☐	☐	☐	☐
The modules contributed to my knowledge of wound documentation and coordination of care.	☐	☐	☐	☐	☐
I learned a concept/strategy I will apply to my wound documentation practice.	☐	☐	☐	☐	☐
The modules included relevant evidence-based content.	☐	☐	☐	☐	☐
Overall, how would you rate the modules?	Very Poor ☐	Poor ☐	Neutral ☐	Good ☐	Very Good ☐

The link to the online education modules was emailed (see Appendix G) to the regional director of operations, who forwarded the link to the HHA nurses via their work emails. The online education modules were available from April 10, 2023, to May 31, 2023. Every Saturday, weekly reports were run to monitor the progress of participation. An email (see Appendix G) was sent to the regional director of operations with a copy to the practice mentor regarding the number of nurses who had created an account in Kajabi and the number of accounts in process and that have been completed. From May 27, 2023, to June 10, 2023, postintervention chart audits were conducted to evaluate the impact of online education on wound documentation and coordination of care.

Data Collection

The purpose of this project was to create, implement, and evaluate the effectiveness of formal online wound documentation modules for home health nurses at a HHA in Southeast Florida in improving wound documentation for the coordination of care, thereby improving patient outcomes. The education modules focused on the types of wounds, staging PUs, wound assessment, documentation guidelines, signs and symptoms of infection, creating the plan of care, and coordination of care. Participants were asked to complete a pre and posttest and a posteducation module evaluation. The following outcomes were evaluated: (a) the percent change in the home health nurses' wound documentation and coordination of care knowledge measured through a pre and posttest; (b) improved documentation efficacy for the coordination of care measured through a pre and post education chart audit that looked at proper wound classification and management, PU prevention and relief, treatment ordered matches treatment provided, coordination with wound management, and wound outcomes; (c) improved patient outcomes measured through a decrease in the ALOS for home health patients receiving wound care; (d) a decrease in the CMS Home Health Quality Reporting Outcome Measure related to wounds, "Percentage of quality episodes in which the patient has one or more Stage 2-4 pressure ulcers, or an unstageable ulcer, present at discharge that are new or worsened since the beginning of the quality episode" (CMS, 2023, February); and (e) posteducation satisfaction with the wound documentation modules.

Collection Procedures

Participants created a unique user ID and password in Kajabi to access the informed consent and proceed with the pretest, two education modules, and posttest and complete the posteducation evaluation of the online modules. Data collection began the first day the online

education modules opened to the participants on April 10, 2023. Data collection was continuous via Kajabi because the education modules were online, and participants could complete the modules 24/7 and start and stop until completed. The modules were open to participants until May 31, 2023, at which point data collection stopped.

The pretest included demographic questions (see Figure 3) on degree level, number of years as a nurse, number of years in home health, and type of certification, if any. Participants were also asked to complete a Likert-scale survey to evaluate the online education modules via Kajabi (see Figure 4). The pre and posttest (see Appendix B) scores were manually transferred from Kajabi to a data workbook. Pre and posttest results were matched via the unique user ID the nurses created. Any tests that did not match, or had incomplete data, were discarded. If the informed consent was not completed, but the participant completed the pre and posttest, informed consent was implied. Implied informed consent was associated with one participant. The data were reviewed and cleaned weekly beginning April 15, 2023, through May 31, 2023.

Preimplementation medical record review data were collected in October 2022 as part of a chart review audit that looked at wound classification, documentation, management, and the coordination of care. The findings related to wound documentation and the coordination of care as a result of the chart audit led to this intervention. Postintervention chart audits were conducted weekly from May 27, 2023, to June 30, 2023, to evaluate the online education's effectiveness on wound documentation for the coordination of care and compared to the preimplementation chart audit using a wound documentation chart audit checklist that scored each item on the checklist as 0 = not met, 1 = partially met, and 2 = met (see Figure 5).

Figure 5

Wound Documentation Chart Audit Tool

Wound Documentation Chart Review

Reviewer _____

		Met = 2, Partially Met = 1, Not Met =0; If N/A, Leave blank	MR#		
ITEM #	CATEGORY	DETAILS	COMMENTS (If score = 0 or 1)	SCORE	COMPOSITE
		Wound Type (if more than one wound, count each one as a separate entry)			N/A - This will be a count of Type
A1	Wound Classification				#DIV/0!
A2		Wound type matches comprehensive assessment			#DIV/0!
B1	Wound Documentation				#DIV/0!
B2		Braden score present			#DIV/0!
B3		Skin assessment present on admission			#DIV/0!
B4		If wound present on admission, initial measurements and description present			#DIV/0!
B5		If wound not present on admission – date of finding, initial measurements and description, cause, etiology present			#DIV/0!
B6		Stage of pressure ulcer matches wound assessment documentation			#DIV/0!
B7		Wound assessment includes:			
B7a		Date wound identified			#DIV/0!
B7b		Wound measurements			#DIV/0!
B7c		Periwound condition			#DIV/0!
B7d		Exudate presence, if present - amount, color, smell are documented			#DIV/0!
B7e		WAT score if EMR provides one			#DIV/0!
B7f		WAT score shows improvement			#DIV/0!
B8		Wound measured correctly			#DIV/0!
B9		Wound measured consistently over time			#DIV/0!
B10		Wound location consistent over time			#DIV/0!
B11		Wound healing evident in documentation			#DIV/0!
C1	Wound Management				#DIV/0!
C2		Wound care ordered matches wound type			#DIV/0!
C3		Wound care provided matches wound care orders			#DIV/0!
C4		Pressure Ulcer Prevention/Relief Interventions documented			#DIV/0!
D1	Coordination of Care				#DIV/0!
D2		Documentation of communication with ordering physician if wound not healing			#DIV/0!
D3		Documentation of communication with ordering physician if wound treatment ordered is inappropriate			#DIV/0!
D4		Documentation of communication with ordering physician if there was significant change in wound status			#DIV/0!
D5		Documentation of communication with other care team members			
D6		Documentation of communication with patient/care giver re: care and treatment plan			#DIV/0!

The ALOS was captured through the HHA's electronic medical record (EMR) system, Homecare Homebase. The ALOS report in Homecare Homebase was filtered by date and diagnosis. The preintervention ALOS was 61 days, which was compared to a postintervention ALOS as of June 3, 2023.

The CMS Home Health Quality Reporting Outcome Measure was requested from the HHA on June 3, 2023, as it can only be obtained by the HHA through a CMS system login and

compared to the preintervention observed value of 0.6%, which was double the observed national value of 0.3%.

Measures/Instruments/Tools

The pre and posttest questions (see Appendix E) were developed by the DNP student with the guidance of the practice mentor, a certified WOCN nurse, based on the learning objectives. The pre and posttest questions were included in the materials sent to the external WOCN-certified nurse practitioner for content validity. The feedback received was positive, and some wording changes were suggested to avoid confusion on two questions, which were updated based on the recommendations.

The wound documentation chart audit checklist (see Figure 5) focused on wound classification, documentation, management, and coordination of care and was created by the DNP student with the guidance of the practice mentor based on evidence-based guidelines for wound documentation and the CMS guidelines for the coordination of care in Medicare-certified home health agencies.

The posteducation module evaluation (see Figure 4) was created by the DNP student using a 5-point Likert scale following the Accreditation Council for Continuing Medical Education (n.d.). evaluation examples, as ANCC does not require a specific activity evaluation format.

Analysis

This section presents the findings derived from the collection and analysis of data. The section begins with a preliminary analysis, encompassing data preparation, data analysis modifications, and assumptions of statistical tests. Subsequently, the sample characteristics, such as response rate, size, and demographics, are examined. The section concludes with the presentation of the DNP project's findings, wherein results for each outcome include the details on the statistical tests, evidence-based measurement instruments, and the incorporation of visual representations to highlight significant discoveries.

The primary data measured the change in knowledge of wound documentation for the coordination of care through the completion of a pretest and posttest by the participants. Secondary data collected measured the effectiveness of the wound documentation for the coordination of care education modules on actual wound documentation, where the DNP student was the principal reviewer and completed all postintervention chart audits. Additional secondary data collected included the CMS Home Health Quality Reporting Outcome Measure related to wounds “Percentage of quality episodes in which the patient has one or more Stage 2-4 pressure ulcers, or an unstageable ulcer, present at discharge that are new or worsened since the beginning of the quality episode” (CMS, 2023, February) and the ALOS where the preintervention data were compared to the postintervention data.

Preliminary Analysis

A data workbook was developed for the input and analysis of data. The DNP student worked with a statistician to determine the best way to analyze and present data. Tables were created and findings were interpreted.

Data Preparation

Data cleaning was conducted to generate a standardized and consistent data set that would facilitate access to and extraction of relevant data. The initial phase of data preparation for the project involved the process of data cleaning. During this stage, informed consents completed by the voluntary participants were reviewed to ensure the participants' consent to participate in the DNP project. If informed consent was not completed, but the participant completed the pre and posttest, informed consent was implied. Implied informed consent was associated with one participant. In addition, data cleaning encompassed the exclusion of pretests and posttests that could not be matched via unique identifiers or had incomplete data. Two pretests were removed due to no matching posttest.

Changes to Data Analysis

There was no change to the data analysis of the pre and posttests. The Wilcoxon Signed-Rank Test was used as proposed. Initially, it was proposed to use the descriptive data to group the pre and posttest average score changes along with the Wilcoxon test to see if the change was statistically significant by the descriptive group; however, the descriptive data collected within the pretest were not used to group the pre and posttest average score changes at the statistician's recommendation due to the low n (12), which would not provide meaningful information. A frequency distribution was utilized to display the descriptive data from the demographic questionnaire within the pretest.

The other change to data analysis was with the pre and postintervention chart audit. The original proposal was to measure improved documentation efficacy and coordination of care through a pre and posteducation chart audit comparing the overall composite score by category pre and postintervention using a paired t-test. A paired t-test was chosen because the pre and

postintervention chart audits collected the same information, eliminating any variation between the two data sets; however, at the statistician's recommendation, the sample size (n = 5 pre; n = 13 post) was too small for a paired-t-test. The statistician calculated a difference score of the composite score of each category to identify an improvement in documentation efficacy and coordination of care. A difference score, also known as a delta score or a change score, is a numerical value that represents the difference or change between two variables or measurements taken at different points in time or under different conditions. The result represents the change between the two time points or conditions. Positive values indicate an increase or improvement, whereas negative values indicate a decrease or deterioration (Sauro, 2016).

Data Assumptions

The data analysis relied on the Wilcoxon Signed-Rank Test for the pre and posttest samples. The Wilcoxon signed-rank test was chosen because it is a paired-mean test that compares two paired groups to see if there is a statistically significant difference between the two groups and is a nonparametric test that does not require a normal distribution. The chart audit data did not meet the assumptions required for a paired t-test. A paired t-test was originally chosen because the pre and postintervention chart audits collected the same information, eliminating any variation between the two data sets; however, the sample size (n = 5 pre; n = 13 post) was too small. At the statistician's recommendation, it was decided to use a difference score calculation of the data obtained from pre and postintervention chart audits. The composite score of each category was analyzed to identify an improvement or decline in documentation efficacy and coordination of care through a difference score analysis.

Sample Characteristics

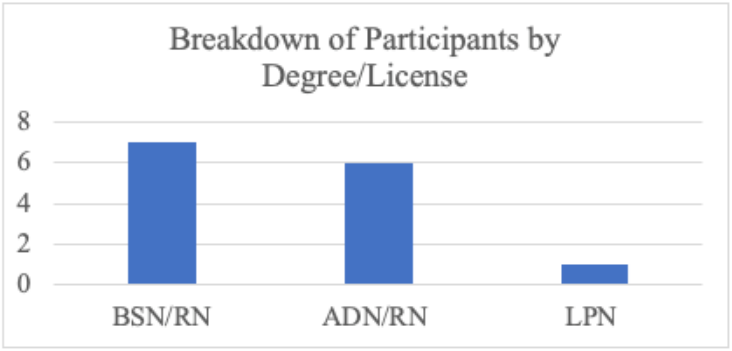
Response Rate, Size, and Demographics

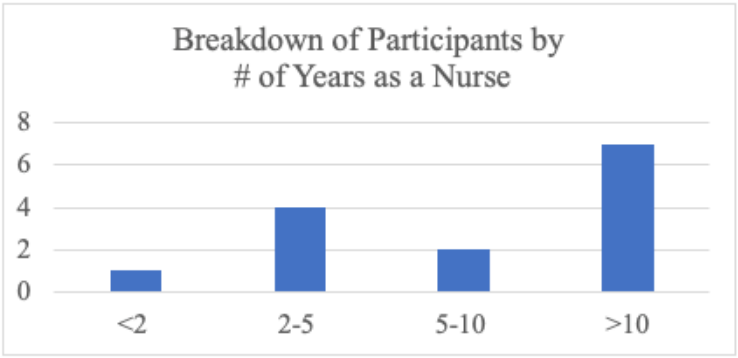
The project participants included 14 full-time, part-time, and per-diem nurses employed at the HHA in Southeast Florida. The maximum participant pool was estimated to be 28 nurses. Descriptive data were collected from 14 nurses who completed the pretest, calculating a 50% response rate. The descriptive data included degree level, number of years as a nurse, number of years in home health, and type of certification, if any.

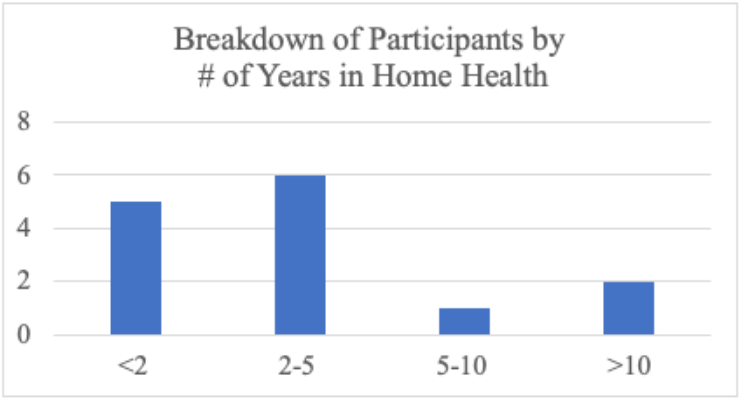
Figure 6 shows the frequency distribution of the data from the demographic questionnaire within the pretest. The frequency distribution of the participant demographic data indicates that 92.8% of the sample were RNs, 54% of the RNs have a Bachelor of Science in Nursing, 50% have > 10 years of experience as a nurse, and 78.6% have been in the home health setting for 5 years or less.

Figure 6

Demographic Frequency Distribution







Findings

Outcome 1: The Percent Change in the Home Health Nurses' Wound Documentation and Coordination of Care Knowledge Measured Through a Pre and Posttest

The Wilcoxon signed-rank test was used to determine if the change in the pre and posttest average score was statistically significant. The pre and posttest data were uploaded to IBM SPSS 27 for statistical analysis. The pre and posttest compared participants' knowledge change by learning objectives to identify areas of strength, improvement opportunities, and overall test scores.

Table 4 shows the descriptive data of the pre and posttests. The mean score of the pretest was 84.28571% and the mean score of the posttest was 97.08333%, showing a 14.5% improvement in overall test scores. The posttest scores show a higher mean, median, and mode than the pretest scores.

Table 4

Pretest and Posttest Scores

	Pretest score	Posttest score
N	14	12
Mean	84.28571	97.08333
Median	85	100
Mode	85	100
Std. Deviation	8.95655	5.82250
Minimum	60	85
Maximum	95	100

Table 5 displays the Wilcoxon signed ranked test score by learning objective and total aggregate score. The Wilcoxon signed rank test revealed a significant increase in aggregate score

from the pretest to the posttest overall, $n = 12$, $m = 84.6$ pre, $m = 97.1$ post, $sd = 9.64$ pre, $sd = 5.82$, post, $z = 2.95$, $p = .003$.

Table 5

Wilcoxon Matched Tests for Knowledge Scale Scores

Learning objective	Time	M	SD	z	*p*
Aggregate Score	Pretest	84.6	9.64	2.95	.003
	Posttest	97.1	5.82		
1. Identify wound etiology and type	Pretest	91.7	12.3	2.00	.046
	Posttest	100	0		
2. Distinguish the different stages of pressure ulcers	Pretest	83.3	22.5	2.12	.034
	Posttest	100	0		
3. Identify the signs and symptoms of infection	Pretest	100	0	0.00	1.000
	Posttest	100	0		
4. Identify wound etiology and type	Pretest	79.2	25.8	0.82	.414
	Posttest	87.5	22.6		
5. List all the required components of wound documentation	Pretest	94.4	19.3	1.00	.317
	Posttest	100	0		
6. Complete a wound plan of care based on wound type	Pretest	80.6	22.3	1.89	.059
	Posttest	94.4	13		
7. Recognize how wound documentation impacts the coordination of care	Pretest	72.9	7.22	3.05	.002
	Posttest	95.8	9.73		

There was a statistically significant increase in scores from the pretest to the posttest for Learning Objectives (LO) 1, 2, and 7, as the p-value was less than .05.

- LO 1 - Identify wound etiology and type, $z = 2.00$, $p = .046$
- LO 2 - Distinguish the different stages of PUs, $z = 2.12$, $p = 0.34$

- LO 7 - Recognize how wound documentation impacts the coordination of care, $z = 3.05$, $p = .002$

Four learning objectives did not show a significant difference, though Learning Objective 6 was close with a p-value of .059:

- LO 3 - Identify the signs and symptoms of infection, $z = 0$, $p = 1$
- LO 4 – Identify wound etiology and type, $z = 0.8$, $p = .414$
- LO 5 - List all the required components of wound documentation, $z = 1$, $p = .317$
- LO 6 - Complete a wound plan of care based on wound type, $z = 1.9$, $p = .059$

Outcome 2: Improved Documentation Efficacy and Coordination of Care Measured Through a Pre and Posteducation Chart Audit

Improved documentation efficacy and coordination of care was measured through a posteducation chart audit comparing overall composite scores by category pre and postintervention using a difference score analysis. Table 6 displays the 28 wound ratings comparing the preintervention chart audits with the postintervention chart audits. A difference score (postintervention score minus preintervention score) was created to determine which items improved the most.

Table 6

Comparison of Preintervention and Postintervention Differences Grouped by Composite Category

Category	Preintervention	Postintervention	Difference
Wound classification composite	0.60	1.92	1.32
Wound type matches comprehensive assessment	0.60	1.92	1.32
Wound documentation composite	1.21	1.79	0.58
Braden score present	1.00	1.04	0.04
Skin assessment present on admission	1.60	2.00	0.40
If wound present on admission, initial measurements, and description present	1.50	2.00	0.50
If wound not present on admission: date of finding, initial measurements and description, cause, etiology present	2.00	2.00	0.00
Stage of pressure ulcer matches wound assessment documentation	0.67	1.91	1.24
Wound assessment includes date wound identified	2.00	2.00	0.00
Wound assessment includes wound measurements	1.20	1.50	0.30
Wound assessment includes periwound condition	0.20	2.00	1.80
Wound assessment includes exudate presence, if present - amount, color, smell are documented	0.00	2.00	2.00
WAT score if EMR provides one	1.60	1.57	-0.03
WAT score shows improvement	0.00	1.50	1.50
Wound measured correctly	2.00	1.62	-0.38
Wound measured consistently over time	2.00	1.60	-0.40
Wound location consistent over time	2.00	2.00	0.00
Wound healing evident in documentation	0.40	1.56	1.16
Wound management composite	0.76	1.21	0.45
Wound care ordered matches wound type	0.80	1.38	0.58
Wound care provided matches wound care orders	0.80	1.69	0.89
Pressure ulcer prevention/relief interventions documented	0.67	0.55	-0.12
Coordination of care composite	0.35	1.22	0.87

Category	Preintervention	Postintervention	Difference
Documentation of communication with ordering physician if wound not healing	0.00	1.50	1.50
Documentation of communication with ordering physician if wound treatment ordered is inappropriate	0.00	0.00	0.00
Documentation of communication with ordering physician if there was significant change in wound status	N/A	1.20	N/A
Documentation of communication with other care team members	0.80	1.38	0.58
Documentation of communication with patient/caregiver re: care and treatment plan	0.60	2.00	1.40

Note. EMR = Electronic medical record; WAT = Wound assessment tool

All category composite scores showed an improvement from preintervention to postintervention. The wound classification composite score increased by 1.32. The coordination of care composite showed an improvement of 0.87 from preintervention to postintervention. The wound documentation composite score showed an improvement of 0.58 from preintervention to postintervention. The wound management composite showed an improvement of 0.45 from preintervention to postintervention.

A review of the individual measures found 24 of 28 measures to be higher postintervention than preintervention. The greatest change from preintervention to postintervention scores was for wound assessment includes exudate presence, if present - amount, color, smell are documented (2.00); wound assessment includes periwound condition (1.80); Wound assessment tool (WAT) score shows improvement (1.50); and documentation of communication with ordering physician if wound not healing (1.50)

Four measures showed a slight decrease from preintervention to postintervention: WAT score if EMR provides one (-0.03), wound measured correctly (-0.38), wound measured consistently over time (-0.40), and the documentation of PU prevention/relief interventions (-0.12).

Outcome 3: Improved Patient Outcomes Measured Through a Decrease in the Average Length of Stay for Home Health Patients Receiving Wound Care

Improved patient outcomes were measured through a decrease in the ALOS for home health patients receiving wound care (see Table 7).

Table 7

ALOS for Home Health Patients Receiving Wound Care

	ALOS
Preintervention	75 days
Postintervention	59 days

Note. ALOS = Average length of stay.

The ALOS decreased from preintervention, 75 days, to 59 days postintervention, calculating a relative change of -21%. Relative change analysis compares the proportional difference between a variable's initial and final values. It allows the researcher to assess a particular measurement's relative improvement or decline (Thakur, 2023, July).

Outcome 4: A Decrease in the CMS Home Health Quality Reporting Outcome Measure Related to Wounds, "Percentage of quality episodes in which the patient has one or more Stage 2-4 pressure ulcers, or an unstageable ulcer, present at discharge that are new or worsened since the beginning of the quality episode" (CMS, 2023, February)

Improved patient outcomes were also measured through a decrease in the CMS Home Health Quality Reporting Outcome Measure related to wounds, "Percentage of quality episodes

in which the patient has one or more Stage 2-4 pressure ulcers, or an unstageable ulcer, present at discharge that are new or worsened since the beginning of the quality episode" (CMS, 2023, February). Table 8 shows a reduction in the percentage of quality episodes with new or worsened ulcers at discharge from 0.6% preintervention to 0.0% postintervention, calculating a relative change of -100%.

Table 8

CMS Home Health Quality Reporting Outcome Measure

CMS Home Health Quality Reporting Outcome Measure "Percentage of quality episodes in which the patient has one or more Stage 2-4 pressure ulcers, or an unstageable ulcer, present at discharge that are new or worsened since the beginning of the quality episode."		
	HHA in SE FL	National
Preintervention	0.6%	0.3%
Postintervention	0.0%	0.3%

Note. FL = Florida; HHA = Home health agency; SE = Southeast

Outcome 5: Posteducation Satisfaction with the Wound Documentation Modules

The posteducation module evaluation question scores were averaged by the individual question to evaluate the participants' satisfaction and effectiveness of the education modules. Table 9 displays the five posttest course evaluation statements. These ratings were based on a 5-point metric: 1 = *Strongly Disagree* to 5 = *Strongly Agree.* Overall, the nurses rated the module a mean rating of $M = 4.73$. The highest course rating was for Statements 1, 2, and 3: The module covered all the objectives, the organization and format of the course facilitated learning, and the course contributed to my knowledge of wound documentation and coordination of care (M = 4.73). The lowest course rating was for Statements 4 and 5: I learned the concept/strategy I will apply it to my documentation practice, and the course included relevant evidence-based content ($M = 4.64$).

Table 9

Module Evaluation Mean Analysis

	N	Minimum	Maximum	Mean	SD
The module covered all the objectives	11	4	5	4.7273	0.4671
The organization and format of the course facilitated learning.	11	4	5	4.7273	0.4671
The course contributed to my knowledge of wound documentation and coordination of care.	11	4	5	4.7273	0.4671
I learned a concept/strategy I will apply to my wound documentation practice.	11	4	5	4.6364	0.50452
The course included relevant evidence-based content	11	4	5	4.6364	0.50452
Overall, how would you rate this module?	11	4	5	4.7273	0.4671

Discussion

Summary of the Problem

Proper wound documentation ensures safe, high-quality care in healthcare settings, including home health agencies. Approximately 30% of home health patients have wounds (Silverstein, 2021), but studies have shown that nearly half of the wound documentation lacks important details on assessment and intervention (Hansen & Fossum, 2016). Inaccurate documentation can hinder the establishment of effective treatment options and impede wound healing, leading to poor patient outcomes and increased costs.

The problem addressed within this DNP project was identified from a chart audit conducted at a HHA in Southeast Florida in October 2022. The chart audit conducted at the HHA revealed deficiencies in wound care documentation, including incorrect wound classifications in 75% of medical records, lack of documented coordination of care in 60% of cases, and knowledge gaps in wound description, type, and etiology in all records. Additionally, the national observed value of the CMS Home Health Quality Reporting Outcome Measure related to wounds was 0.3% during the chart audit. In comparison, the HHA in Southeast Florida had an observed value of 0.6%. During an accreditation survey, the HHA was cited for communication issues with physicians and home health aides not following the care plan, highlighting the importance of coordination of care.

Purpose

This project aimed to develop, implement, and assess the efficacy of formal online education modules on wound documentation for home health nurses in a Southeast Florida HHA. The project aim was to enhance wound documentation to facilitate better coordination of care,

improve wound healing, and decrease the ALOS of patients receiving wound care at a HHA in Southeast Florida.

Discussion of Findings Related to Outcomes

The following PICO question guided this project: Does formal online education on wound documentation result in improved documentation for the coordination of care among patients receiving wound care in the home health setting? Fourteen nurses participated in the online education intervention calculating a 50% response rate. Twelve nurses completed both the pre and posttest. Most (92.8%) nurses were RNs, 50% had > 10 years of experience as a nurse, and 78.6% had been in the home health setting for 5 years or less.

Outcome 1: Improved Home Health Nurses' Wound Documentation and Coordination of Care Knowledge Measured Through a Pre and Posttest

The data from the pre and posttests show an improvement in aggregate test scores, as indicated by the mean score of the pretest (87.28571%) and posttest (97.08333%), representing a 14.5% improvement. The posttest scores have higher mean, median, and mode values than the pretest scores, suggesting improved knowledge following the educational intervention. The Wilcoxon signed-rank test demonstrated a statistically significant increase in aggregate scores from the pretest to posttest ($z = 2.953$, $p = .003$). Moreover, the analysis of learning objectives reveals that three out of the seven objectives (LO1, LO2, and LO7) showed a statistically significant increase in scores from the pretest to posttest ($p < .05$). These findings indicate that the educational intervention positively influenced nurses' performance in identifying wound etiology and type, distinguishing the different stages of PUs, and recognizing how wound documentation impacts the coordination of care.

Outcome 2: Improved Documentation Efficacy and Coordination of Care Measured Through a Pre and Posteducation Chart Audit

The posteducation chart audit showed improvement in documentation efficacy and coordination of care in several categories. The wound classification composite score increased by 1.32, indicating a positive impact on accurately classifying and documenting wound types. The coordination of care composite score improved by 0.87, suggesting improved communication and documentation with care team members. The wound documentation composite score improved by 0.58, indicating a positive trend in documenting wound-related information. The wound management composite score also showed improvement, with a change of 0.45, indicating better matching of wound care orders and provided wound care (see Table 6).

Individual measures within the wound documentation composite category, such as periwound condition, exudate presence and characteristics, wound healing documentation, wound measurement accuracy and consistency, and documentation of wound location and characteristics, all showed improvements from preintervention to postintervention. However, the documentation of PU prevention/relief interventions showed a slight decrease (-0.12), indicating a decline in appropriately documenting these interventions (see Figure 1).

Figure 7

Pre and Postintervention Chart Audit Scores

Met = 2, Partially Met = 1, Not Met =0; If N/A, Leave blank		Pre-	Post-
CATEGORY	**DETAILS**	**COMPOSITE SCORE**	**COMPOSITE SCORE**
Wound Classification		1.80	1.92
	Wound type matches comprehensive assessment	1.8	1.92
Wound Documentation		1.74	1.79
	Braden score present	1	1.04
	Skin assessment present on admission	2	2.00
	If wound present on admission, initial measurements, and description present	2	2.00
	If wound not present on admission – date of finding, initial measurements and description, cause, etiology present	1	2.00
	Stage of pressure ulcer matches wound assessment documentation	1.75	1.91
	Wound assessment includes:		
	Date wound identified	2	2.00
	Wound measurements	2	1.50
	Periwound condition	2	2.00
	Exudate presence, if present - amount, color, smell are documented	2	2.00
	WAT score if EMR provides one	2	1.57
	WAT score shows improvement	1.2	1.50
	Wound measured correctly	2	1.62
	Wound measured consistently over time	2	1.60
	Wound location consistent over time	2	2.00
	Wound healing evident in documentation	1.2	1.56
Wound Management		1.67	1.21
	Wound care ordered matches wound type	2.00	1.38
	Wound care provided matches wound care orders	2.00	1.69
	Pressure Ulcer Prevention/Relief Interventions documented	1.00	0.55
Coordination of Care		1.64	1.22
	Documentation of communication with ordering physician if wound not healing	1.33	1.50
	Documentation of communication with ordering physician if wound treatment ordered is inappropriate	N/A	0.00
	Documentation of communication with ordering physician if there was significant change in wound status	N/A	1.20
	Documentation of communication with other care team members	1.6	1.38
	Documentation of communication with patient/caregiver re: care and treatment plan	2	2.00

Overall, the results suggest the posteducation intervention positively impacted documentation efficacy and coordination of care in wound management. Improvements were demonstrated in wound classification, wound documentation, wound management, and coordination of care. The slight decline in documenting PU prevention/relief interventions indicates a need for further attention and improvement efforts. The findings highlight the importance of targeted educational interventions and ongoing monitoring to support continuous improvement in documentation practices and coordination of care in wound management.

Outcome 3: Improved Patient Outcomes Measured Through a Decrease in the Average Length of Stay for Home Health Patients Receiving Wound Care

The ALOS decreased from 75 to 59 days postintervention, indicating a relative change of -21%. Relative change analysis compares the proportional difference between a variable's initial and final values. It allows the researcher to assess a particular measurement's relative improvement or decline (Thakur, 2023, July). This reduction in ALOS suggests the intervention led to more efficient wound care management, resulting in shorter patient stays. Shorter ALOS can lead to cost savings and improved patient experiences (HealthCatalyst, n.d.).

Outcome 4: A Decrease in the CMS Home Health Quality Reporting Outcome Measure Related to Wounds, "Percentage of quality episodes in which the patient has one or more Stage 2-4 pressure ulcers, or an unstageable ulcer, present at discharge that are new or worsened since the beginning of the quality episode" (CMS, 2023, February)

A quality episode in home health refers to a period during which a patient receives skilled home health services from an HHA. It typically involves a comprehensive plan of care designed to meet the patient's specific needs and improve their health outcomes. The percentage of quality episodes with new or worsened PUs at discharge decreased from 0.6% preintervention to 0.0%

postintervention, indicating a relative change of -100%, whereas the national average remained the same. The data suggest the interventions implemented by the HHA positively impacted the prevention or management of PUs, as evidenced by the reduction in the percentage of quality episodes with new or worsened ulcers at discharge (0.6% preintervention to 0.0% postintervention). Although the national average remained constant, the HHA's decrease indicates their success in this outcome measure.

Outcome 5: Post Education Satisfaction with the Wound Documentation Modules

The high average rating of 4.73 for the posteducation module evaluation indicates high participant satisfaction with the educational intervention. These ratings were based on a 5-point metric: 1 = Strongly Disagree to 5 = Strongly Agree. The positive ratings for statements related to module objectives, organization, and contribution to knowledge demonstrate that the intervention effectively met nurses' expectations and needs. However, the lower ratings for statements related to applying concepts/strategies to my practice and including evidence-based content identify areas for investigation to see if changes must be made to the education modules.

The ratings for all the aspects of the module/course were consistently high, with mean scores ranging from 4.6364 to 4.7273 out of 5. The minimum and maximum ratings for each aspect were consistently 4 and 5, respectively, indicating a relatively narrow range of responses. The standard deviations were relatively low across all aspects, suggesting a high degree of agreement among the respondents.

Overall, the survey results indicate the modules on wound documentation and coordination of care were well-received by the nurses. They rated the coverage of objectives, organization and format, contribution to knowledge, and overall rating highly. Additionally, nurses reported learning concepts/strategies that they would apply to their wound documentation

practice, and they found the course content to be relevant and evidence based. The consistent ratings and low standard deviations suggest a strong consensus among the respondents regarding the modules' quality and effectiveness.

Discussion of Results Related to the Theoretical Framework and Conceptual Models

Kurt Lewin's Change Theory

Kurt Lewin's change theory guided this project's intervention to increase home health nurses' knowledge of wound documentation and coordination of care. Lewin's theory consists of three stages for change: unfreezing, change, and refreezing (Hussain et al., 2018).

Unfreezing. Preintervention chart audit results indicated a need for change in the home health nurses' wound documentation and coordination of care practices. This recognition of the need for change corresponds to the unfreezing stage, where individuals become aware of the need for change and are motivated to seek improvement.

- Outcome 1: The pre and posttest scores showed a statistically significant improvement in overall test scores, indicating a need for change and motivation to enhance knowledge and skills in wound documentation and coordination of care.
- Outcome 5: The high ratings in the posteducation satisfaction survey demonstrate that the nurses were motivated and open to learning and embracing the change in their documentation practices.

Change. The educational intervention implemented in this project represents the change stage of Lewin's change theory. The nurses undertook a targeted educational program focused on wound documentation and coordination of care. The posttest scores and postintervention chart audit results demonstrated the effectiveness of the intervention in improving nurses' knowledge, documentation efficacy, and coordination of care skills. The significant increase in posttest

scores and improvements in several documentation categories indicate successful changes fostered by the educational intervention.

- Outcome 2: The chart audit results show improvements in several individual line items related to wound documentation and coordination of care, indicating the successful implementation of new practices and processes.
- Outcome 3: The decrease in the ALOS for home health patients receiving wound care indicates a change in the management approach, resulting in more efficient and effective care delivery.

Refreezing. The refreezing stage refers to solidifying the changes and making them a permanent part of individuals' behavior. In this context, the positive outcomes observed in the posttest scores, postintervention chart audit results, and statistically significant improvements in specific learning objectives reflect the initial stages of refreezing. However, ongoing monitoring and reinforcement may be necessary to ensure the changes become ingrained in the nurses' routine practices. Further efforts are needed to address the minor decline in documenting PU prevention/relief interventions and to sustain the improvements achieved.

- Outcome 4: The decrease in the CMS Home Health Quality Reporting Outcome Measure related to wounds demonstrates a positive impact on the organization's practices, leading to improved patient outcomes.
- Outcome 5: The positive posteducation satisfaction ratings indicate the nurses have embraced the new knowledge and skills acquired through the education modules. The nurses have found the education valuable and relevant to their professional development. By embracing the new knowledge and skills, they will likely apply them in their practice, leading to improved patient care and outcomes.

Overall, the results align with Lewin's change theory as they indicate the initial unfreezing of the status quo, successful changes implemented through the educational intervention, and the need for ongoing efforts to sustain the improvements achieved in wound documentation and coordination of care practices. The improvement in knowledge, documentation practices, coordination of care, patient outcomes, and participant satisfaction collectively demonstrate the effectiveness of the change efforts based on Lewin's theory.

ANCC Primary Accreditation Conceptual Framework

This DNP educational project was developed following the ANCC Primary Accreditation Conceptual Framework EDP criteria: structural capacity, EDP, and quality outcomes. The ANCC Primary Accreditation conceptual framework follows the Donabedian model of three pillars: structure, process, and outcomes (ANCC, 2023).

Structural Capacity

Structural capacity refers to an organization’s infrastructure and capacity to function as an ANCC-accredited provider for NCPD. The findings provide information on the resources and infrastructure available for the educational program. The project used an online platform, Kajabi, to deploy the education modules, pre and posttests, and education module evaluation. Excel was used for data capture and analysis, and IBM SPSS 27 was used for statistical analysis, indicating the availability of software tools for data processing, and suggesting the presence of a structured framework for reporting and documentation.

Educational Design Process

The EDP ensures the quality of educational activity planning, implementation, and evaluation. The findings demonstrate the educational program’s effectiveness in improving wound documentation and coordination of care knowledge. EDP includes analyzing the learning

objectives, creating a curriculum plan, assessing student progress, and evaluating the program's effectiveness. The pre and posttest analysis reveals statistically significant improvements in aggregate test scores and individual learning objectives. These findings indicate that the educational activity's design successfully achieved the intended learning outcomes. The evaluation of posteducation satisfaction with the wound documentation modules also provides positive feedback on the educational program's design and delivery.

- Outcome 1: The improvement in home health nurses' wound documentation and coordination of care knowledge demonstrates the positive impact of educational interventions and resources provided to enhance nurses' competencies. Using pre and posttests, learning objectives, and statistical analysis using IBM SPSS indicates a structured educational intervention aimed at improving wound documentation and coordination of care knowledge. Additionally, the Wilcoxon signed-rank test and statistical analysis using SPSS indicate the rigorous evaluation process conducted to assess the change in knowledge and identify areas of strength and improvement opportunities.
- Outcome 2: The pre and posteducation chart audits demonstrate the implementation of targeted interventions to improve documentation efficacy and coordination of care practices among home health nurses.
- Outcome 5: The high posteducation satisfaction ratings indicate that the education modules were well-designed and aligned with the nurses' needs and expectations, contributing to a positive learning environment and overall context for change.

Quality Outcomes

The quality of outcomes associated with NCPD is used to evaluate the impact on professional practice and patient outcomes. This DNP project measured several quality outcomes to assess the educational program's impact. These outcomes included improved wound documentation efficacy and coordination of care, decreased ALOS for patients receiving wound care, and a decrease in the percentage of quality episodes with new or worsened ulcers at discharge. These findings suggest the educational program has resulted in positive quality outcomes and improved patient care.

The educational intervention positively impacted home health nurses' wound documentation and coordination of care knowledge, as evidenced by significant improvements in the aggregate test scores and an increase in mean, median, and mode scores. The chart audit results also demonstrate improvements in various categories of wound documentation and coordination of care, indicating enhanced documentation efficacy and coordination of care practices. Furthermore, reducing the percentage of quality episodes with new or worsened ulcers at discharge signifies improved patient outcomes and adherence to CMS Home Health Quality Reporting Outcome Measures. Overall, the results align with the ANCC Primary Accreditation Conceptual Framework, as they demonstrate the impact of the educational interventions and process evaluations on the knowledge, practices, and outcomes related to wound documentation, coordination of care, and patient care within home health nursing.

Interpretation of Findings

Based on the findings, the DNP student concluded that this project successfully improved wound documentation and coordination of care among the home health nurses at the HHA in Southeast Florida.

Significant Improvement in Test Scores

The posttest scores showed an increase compared to the pretest scores. The mean score improved from 87.28571% to 97.08333%, indicating a 14.5% improvement in overall test scores and a *p*-value of .003. This improvement signifies that the educational intervention effectively enhanced the nurses' knowledge and understanding of wound documentation and coordination of care.

Statistically Significant Improvement in Learning Objectives

Four of the seven learning objectives showed statistically significant improvement from the pretest to the posttest. These objectives focused on identifying wound etiology and type, distinguishing different stages of PUs, completing a wound plan of care, and recognizing how wound documentation impacts the coordination of care. The statistically significant improvement in learning objectives related to wound etiology and type identification, distinguishing different stages of PUs, completing a wound plan of care, and understanding the impact of wound documentation on coordination of care indicates that the educational intervention successfully achieved specific learning outcomes. These findings suggest that home health nurses who participated in the intervention have acquired the knowledge and skills to accurately identify and assess wounds, develop appropriate care plans, and understand the importance of thorough documentation for effective coordination of care. This improved competency among nurses will likely positively impact patient outcomes by ensuring accurate diagnosis, appropriate treatment, and effective coordination of care.

Improvement in Documentation Efficacy and Coordination of Care

The improvements observed in documentation efficacy and coordination of care, as revealed by the posteducation chart audit, are likely to impact patient outcomes positively. The

positive changes in composite scores for wound classification, coordination of care, wound documentation, and wound management indicate enhancements in accurately identifying and classifying wounds, effectively communicating with care team members and patients/caregivers, documenting wound-related information, and aligning wound care orders.

Among the individual line items, 24 out of 28 showed improvements, further indicating progress in various aspects of wound assessment, communication, and documentation. Notable improvements were observed in measures such as documenting exudate presence and characteristics, assessing periwound condition, improvement in the WAT score, and documenting communication with the ordering physician in cases where wounds are not healing.

Although four measures showed a slight decrease from preintervention to postintervention, such as WAT score if EMR provides one, wound measurement consistency over time, and documentation of PU prevention/relief interventions, the overall positive trend in most measures suggests an overall improvement in patient outcomes. These findings indicate that the educational intervention has positively influenced wound documentation practices and coordination of care, which may lead to improved wound management, accurate diagnosis, appropriate treatment, and improved patient outcomes.

Identification of Areas for Further Improvement

Although the project achieved significant improvements, it also identified an area that requires further attention. The slight decline in documenting PU prevention/relief interventions highlights a need for continued efforts to address this aspect of care. By recognizing this gap, the project has highlighted an opportunity for improvement that, if addressed, could lower the incidence of new or worsening PUs.

Addressing this area of concern through targeted interventions and educational initiatives can help ensure that nurses consistently implement and document PU prevention and relief interventions. By doing so, patient outcomes related to PU prevention and management can be further improved, leading to better overall patient care and outcomes.

Limitations

For this project, the definition of a limitation was an occurrence that the DNP student had no control over. The following limitations were identified throughout this DNP project: sample size, a change in ownership, the data extraction process, and an unannounced survey.

Sample Size

The primary limitation of this project was the sample size of nurse participants in the education intervention and the number of patients receiving wound care who met the criteria of receiving HHC through a HHA in Southeast Florida with a primary or secondary diagnosis of a PU, lower extremity wound, venous stasis ulcer, arterial ulcer, or diabetic foot ulcer. Patients with an infected wound were excluded due to the infection prolonging the healing process. Patients with a cancer diagnosis were excluded due to their unavoidable deterioration.

Participants

The sample size of nurse participants who completed the wound documentation education modules was 12. The original count of potential nurse participants was 28. Fourteen nurses began the education and 12 finished the project. Even though there were only 12 participants, data from the pre and posttest aggregate scores were statistically significant ($p = .003$). Due to the small sample size, these findings cannot be generalized to all home health nurses who provide wound care.

Chart Audit

This project used pre and postintervention chart audits to assess the education intervention's impact on nurses' wound documentation for the coordination of care. Although 17% of the patients at the HHA in Southeast Florida had a diagnosis related to a wound, only five wounds in the prechart audit and 13 in the postchart audit met the criteria of a wound for this project. The small sample size resulted in a change in data analysis. The original proposal was to measure improved documentation efficacy and coordination of care through a pre and posteducation chart audit, comparing overall composite score by category pre and postintervention using a paired t-test. At the statistician's recommendation, the sample size (n = 5 pre; n = 13 post) was too small for a paired-t-test. The statistician calculated a difference score of the composite score of each category to identify an improvement in documentation efficacy and coordination of care.

Change in Ownership

The HHA in Southeast Florida was sold in January 2023, before the project began. This change introduced a variable that could have stopped the project from starting or impacted the number of nurse participants. The new owners stated they were committed to training the staff and specifically to wound care due to the HHA's strategic plan to be the best HHA in the area for wound care. The new owners supported the project; however, with any acquisition, there is the risk of staff leaving and reorganization. These potential changes could have positively or negatively impacted the project results, though they had a positive impact.

Kajabi Data Extraction

Data extraction from Kajabi was a limitation in that the pretests, posttests, and module evaluation data could not be downloaded in a .csv file as initially thought. This is an issue with

the design of the platform for data collection. The gap in the Kajabi platform could have had a major impact if there were a large amount of data.

ACHC Accreditation Survey

The HHA in Southeast Florida was due for its ACHC survey. This survey is unannounced, and the HHA has no control over when the surveyor will arrive. The HHA conducted a mock survey the week of April 10th, 2023, to prepare for the ACHC survey that identified opportunities for improvement that required education and training outside of the focus of this project, which took away nurses' time to continue with the wound documentation education modules. The actual ACHC unannounced survey occurred the week of May 15th, 2023.

Barriers and Mitigation Strategies

For this DNP project, the DNP student defined a barrier as an unexpected occurrence that could be mitigated. Several barriers requiring mitigation strategies were encountered during this project. The barriers were the unique identifier, lost audio, Kajabi data extraction, lost project link, informed consent, an unannounced survey, and EMR access.

Unique Identifier

The first barrier encountered was requiring an email address as a user ID for the Kajabi platform. The original plan was for participants to create a unique, unidentifiable user ID. Upon speaking with Kajabi, the DNP student learned that an email address was necessary to create an account. To mitigate this, the DNP student informed the faculty advisor, who informed the Rasmussen IRB of the unique identifier change to ensure participants' confidentiality. The DNP student instructed the participants to use an unidentifiable email address. In cases where participants did not possess such an email, they were instructed to create one using the first three

letters of their mother's name and the last four digits of their mobile number. Account creation instructions were added to the account creation page (see Figure 2).

Module Audio

The second barrier encountered was the loss of audio in Lesson 2 of Module 1. To mitigate this, Lesson 2 was broken into two parts. Lessons 2a and 2b were rerecorded. Lesson 2a was rerecorded by a live voice. Lesson 2b and the remaining lessons were recorded using the text-to-speech program in Doodly, a program used to design the modules.

Kajabi Data Extraction

The pretest, posttest, and module evaluation results could not be exported from Kajabi as a .csv file. To mitigate this issue, the DNP student manually entered the quiz data into an Excel data workbook weekly. This mitigation strategy worked due to the small sample size. If the sample size were large, the DNP student would have worked with Kajabi to discuss other mitigation strategies.

Lost Project Link

The HHA lost access to the Kajabi modules link due to an email server switch related to the change in ownership. The clinical manager at the HHA reached out to the DNP student, informing the student of the lost link. To mitigate this, the DNP student resent the link to the clinical manager, who reshared the link with the home health nurses.

Informed Consent

Some participants did not mark the informed consent as complete, although they had completed the pre and posttest. If the participant completed the pre and posttest without marking the informed consent as complete, completing the pre and posttest served as implied consent. Implied informed consent was associated with one participant.

ACHC Accreditation Survey Preparedness

The HHA conducted a mock survey the week of April 10, 2023, to prepare for the ACHC survey that identified opportunities for improvement that required education and training outside of the focus of this project, which took away nurses' time to continue with the wound documentation education modules. Not all participants completed the educational modules by the deadline. To mitigate this, the DNP student extended the deadline to the end of May, providing participants additional time to finish the modules. Nightly emails were sent to the intervention site as reminders and progress updates on the completion status.

EMR Access

The DNP student's access to the HHA's EMR expired. The student emailed the regional director of operations at the HHA requesting the reinstatement of their EMR access. Despite encountering various barriers, the DNP student implemented effective mitigation strategies. The ability to adapt and overcome these challenges contributed to the project's success.

Unintended Consequences

There were some unintended consequences of this study. The DNP student did not anticipate the small sample size of patients receiving wound care that met the project's wound criteria for the chart audit, given that 17% of the patients receiving home health services had a diagnosis related to wound care. Upon chart selection, it was revealed that wound care patients were related to trauma or surgery. This change in sample size played a large role in the data collection and statistical testing methods.

Another unintended consequence of this project was a positive one. The DNP student found benefits in sharing the wound documentation modules with the HHA beyond the project's

scope. The interactions with the HHA's new owners, the regional director of operations, and the clinical manager fostered a sense of trust and led to meaningful friendships.

Facilitators

Facilitators play an important role in a project's success. Their involvement can enhance the project's efficiency, effectiveness, and overall outcome (Steffileno et al., 2019). This project had several facilitators, including the new owners, the regional director of operations, the clinical manager, TCHHE, and face-to-face interactions.

New Owners

There was a change in ownership at the end of January 2023. The DNP student spoke with the new owners on January 11, 2023, to discuss the project. The support and commitment from the new owners of the HHA were instrumental in ensuring the implementation of this project. If the new owners did not see the value of the project, this project would not have been implemented, requiring the DNP student to find another intervention site.

Regional Director of Operations

The regional director of operations oversees the HHA in Southeast Florida. The support the regional director of operations provided was key in successfully implementing and completing the education intervention. The regional director was willing to help with whatever the DNP student needed. This support created a positive atmosphere and enhanced the nurses' motivation to participate in the project. The support from this level also emphasized the importance of wound documentation education and promoted its adoption throughout the organization in support of the HHA's goal to be the best in providing wound care in their service area.

Clinical Manager

The clinical manager reports to the regional director of operations and oversees the clinical staff. The active involvement of the clinical manager in sending text messages and emails to the nurses was a significant facilitator. These communication methods reminded and prompted the nurses to complete the education modules. Using case conference time to complete the education modules allowed the nurses to complete the modules during the workday versus in the evening or on weekends at home.

The Center for Home Health Excellence

The involvement of the DNP student's practice mentor and TCHHE provided additional credibility and expertise to this project. The practice mentor, the director of TCHHE, has been an RN for 30 years. The practice mentor/director holds a Juris Doctor degree and is a certified WOCN. The practice mentor/director holds multiple certifications in compliance and is also certified in OASIS-E, a comprehensive home health assessment tool. Having someone with these credentials and length of experience was a huge facilitator for this project.

TCHHE used Kajabi, an online learning platform for delivering educational modules that allow testing, tracking, and reporting. The online platform was easy to implement and use and available 24/7 for learners. Additionally, an AI text-to-speech program was used to prevent the loss of audio in the education modules. This commitment to automation and artificial intelligence ensured the seamless delivery of content and reduced potential technical disruptions. Technology integration also enhanced the overall user experience, making the educational process more efficient and effective.

Face-to-Face Interaction

The DNP student attended the staff meeting in person, where the project was reviewed following the information in the informed consent. The DNP student shared and reviewed the informed consent form with the staff, allowing for a question-and-answer session. The DNP student also presented an executive summary of the wound documentation education intervention to the staff in person. These interactions built a personal connection and provided a platform for clarifying doubts, addressing concerns, and emphasizing the potential benefits of the education modules with the hope of higher participation and a comprehensive understanding of the project's goals.

The facilitators contributed to the effective implementation and success of the education intervention at the HHA in Southeast Florida. The support from the clinical manager, regional director, and practice mentor; the adoption of innovative technologies; and the new ownership's commitment created a favorable environment for promoting continuous learning and improvement in the HHC setting.

Summary of the Project Findings

The DNP project intervention was implemented at a HHA in Southeast Florida through TCHHE. The implications for practice are discussed in four areas, the project site (TCHHE), intervention site (HHA), general practice, and DNP essentials.

Implications of Findings for the Project Site

TCHHE provided wound documentation education modules via Kajbi. The modules were created using the expertise of a certified WOCN and externally reviewed by a certified WOCN nurse practitioner. The modules included a discussion on the types of wounds, staging PUs, wound assessment, documentation guidelines, signs and symptoms of infection, creating the plan

of care, and coordination of care. The two wound documentation modules used in this DNP project were two modules of a planned home health nurse certification program and will be used to support grant applications to cover expenses for creating and providing a home health nurse certification program.

Practice Implications

The DNP project findings have implications for nursing practice within TCHHE. The project emphasized the importance of evidence-based practice in HHC, and the positive outcomes of the wound documentation education intervention highlighted the need for TCHHE to prioritize and promote evidence-based practices in its educational programs. By adopting evidence-based wound management for the coordination of care strategies, home health nurses will be better equipped to improve patient outcomes (Connor et al., 2023).

The project's results showed statistically significant improved knowledge of wound documentation for the coordination of care following the educational intervention; the strategic plan to create a home health nurse certification program aligns well with the findings. The certification program can further enhance the quality of care delivered by home health nurses by focusing on developing clinical competence. This emphasis on clinical competence equips nurses to address the unique challenges in HHC settings, thus ensuring better wound management and coordination of care.

The improvement in the CMS Home Health Quality Reporting Outcome Measure related to wounds after the educational intervention also supports incorporating quality measures in the certification program. By adhering to regulatory requirements and continuing to integrate quality measures into its educational offerings, TCHHE can facilitate consistent improvements in patient outcomes related to wound care. TCHHE’s strategic plan to offer specialized education through

certification aligns with the project's positive outcomes from the wound documentation education intervention. The certification program enables TCHHE to provide specialized training, equipping home health nurses with expertise in wound management, coordination of care, and other related topics, leading to improved patient care.

The project findings highlight the importance of patient-centered care in home health practice. By prioritizing patients' needs and preferences, home health nurses can contribute to reduced lengths of stay and improved patient outcomes. Therefore, by incorporating patient-centered care principles into its educational programs, TCHHE can enable nurses to provide compassionate and personalized care to their patients, further enhancing the overall quality of HHC.

Education Implications

The DNP project findings align closely with TCHHE's strategic plan to create a home health nurse certification program. The statistically significant findings from the wound documentation education intervention highlight the importance of offering specialized education in wound documentation for the coordination of care, which complements the certification program's objectives. By prioritizing wound care education in its curriculum, TCHHE addressed the specific needs of home health nurses in this area and ensured comprehensive training for the certification program.

The success of the wound documentation education intervention highlights the significance of developing evidence-based educational programs. TCHHE must ensure its curriculum for the certification program is built on the latest evidence and best practices in wound management and other relevant areas of HHC. This emphasis on evidence-based content

equips home health professionals with up-to-date knowledge and skills, aligning with the strategic plan's goal of providing comprehensive training.

Interprofessional collaboration was highlighted as an important aspect of wound management for the coordination of care in the education modules. In line with the strategic plan, incorporating IPE into the certification program prepares home health professionals to work effectively in interdisciplinary teams and promotes a holistic approach to patient care. Continuous professional development is valued in the project's success, reinforcing the importance of ongoing training. TCHHE's strategic plan can incorporate regular opportunities for further education and training to enhance home health nurses' skills and knowledge in various aspects of HHC, ensuring continuous growth and development in the field.

The project's focus on quality assurance in education aligns with the strategic plan's aim to provide a high-standard certification program. By consistently assessing the effectiveness of its educational programs and making necessary improvements, TCHHE can maintain excellence in its training offerings, benefiting home health professionals seeking certification. Furthermore, collaboration with experts played an important role in the project's success. TCHHE should continue developing partnerships with wound management experts and professionals from relevant fields to enrich its educational offerings and align with the strategic plan's goals. These collaborations enhance the certification program's educational experience, ensuring participants receive the most comprehensive and cutting-edge training.

In conjunction with the educational implications, the DNP project's adherence to the ANCC Accredited Provider EDP ensured that the wound documentation modules followed a rigorous and structured approach to learning. The identification of the professional practice gap, convening of a planning committee, identification of underlying educational needs, and targeting

of a specific audience all contributed to a well-structured and focused education intervention. The development of learning outcomes aligned with the ANCC education design project and, therefore, with TCHHE's strategic plan. These learning outcomes ensured participants gained comprehensive knowledge and skills in wound management for the coordination of care.

The inclusion of active learner engagement activities, such as PowerPoint presentations with wound images, embedded videos, and case studies with questions, aligned with the ANCC EDP and, therefore, TCHHE's strategic plan with an emphasis on providing impactful and interactive educational content. This active learner engagement enhanced the participants' learning experiences and contributed to their competence in wound documentation for the coordination of care.

Policy Implications

The DNP project's findings align with TCHHE's strategic plan to create a home health nurse certification program, reflecting a commitment to improving educational programs and enhancing overall quality in-home healthcare. By establishing a structured evaluation process, TCHHE can maintain high standards of quality and effectiveness of its certification program. Through regular evaluations, the certification program can be continuously refined and improved to meet the evolving needs of home health professionals and ensure the program's success in achieving its goals.

To ensure reliable and standardized data for evaluating the impact of educational programs, TCHHE should develop comprehensive policies and guidelines for data management and analysis. This approach enables evidence-based decision-making and ensures the certification program's effectiveness is accurately measured and reported. Further, adopting a continuous quality improvement approach complements the strategic plan's focus on creating a

comprehensive home health nurse certification program. Regularly assessing and enhancing the program's effectiveness enables TCHHE to stay proactive in refining its offerings and maintaining a high level of education quality, benefiting home health nurses seeking certification.

Establishing policies that promote collaborative partnerships with researchers, healthcare organizations, and stakeholders aligns with the strategic plan's goal of providing evidence-based education. These collaborations enrich the certification program's curriculum with cutting-edge research and best practices, ensuring home health professionals receive the most up-to-date knowledge and training. Recognizing the diverse needs of various home health agencies and staff is also an essential aspect of policy implications. Implementing policies to tailor educational content addresses participants' unique challenges and ensures the certification program's relevance and impact across different contexts.

Developing policies for monitoring and reporting program outcomes reinforces the strategic plan's objective of providing a high-standard certification program. Clear and comprehensive reporting mechanisms enable TCHHE to demonstrate the program's impact and effectiveness to stakeholders and funding sources, promoting transparency and accountability. Establishing policies for effective communication of program results to stakeholders and the broader healthcare community supports the strategic plan's aim of advancing HHC practices. By leveraging positive outcomes for marketing and awareness, TCHHE can attract potential participants and promote the certification program’s value in elevating HHC standards.

The DNP project findings have strong synergies with TCHHE's strategic plan to create a home health nurse certification program. The practice implications emphasize integrating evidence-based practices, clinical competence, quality measures, and patient-centered care in the

certification program; improving patient outcomes; and advancing HHC practices. The educational implications and adherence to the ANCC EDP provide a foundation for the certification program, incorporating evidence-based content, customization, IPE, continuous professional development, and expert collaborations. The policy implications support TCHHE's commitment to continuously improve its educational programs, promote evidence-based and patient-centered care, enhance the competence of home health nurses, and contribute to better patient outcomes in home health settings.

Implications of Findings for the Intervention Site

The intervention was implemented at a HHA in Southeast Florida. The HHA is a for-profit Medicare-certified HHA that provides nursing care, physical therapy, occupational therapy, speech therapy, medical social, home health aide, and dietician services in Medicare-beneficiary homes based on Medicare's home health service eligibility criteria.

Practice Implications

The DNP project's findings have implications for nursing practice within the HHA in Southeast Florida. The project's findings showed the importance of focusing on specific areas to support and improve nursing practice in the HHA. The HHA should prioritize providing ongoing education and training opportunities for nurses, particularly in wound documentation for the coordination of care. The statistically significant impact of wound documentation education modules on nurses' knowledge highlights the need for continuous learning.

Improvements in documentation efficacy and coordination of care for wound management are topics to emphasize. Nurses must recognize the value of accurate and comprehensive wound documentation in facilitating effective communication among all care

team members, physicians, patients, and caregivers. This emphasis on effective coordination of care can lead to better patient outcomes and reduce the length of stay for patients receiving HHC.

The DNP project's findings highlight the importance of patient outcomes and quality improvement. The decrease in the ALOS for home health patients receiving wound care suggests that improved wound documentation for the coordination of care positively impacts patient outcomes. This finding reinforces the significance of promoting quality improvement initiatives in healthcare settings.

To sustain these positive outcomes, nurses should be encouraged to pursue CE opportunities, especially in wound care and documentation. By proactively seeking further education, nurses can continually enhance their knowledge and skills, ensuring they stay updated with the latest developments in HHC practices.

In alignment with the strategic plan to double its census, the HHA can leverage the DNP project's findings as part of its marketing plan. Utilizing internal HHA data to demonstrate their expertise in managing wounds, especially complex wounds, can be a convincing approach. By demonstrating its success in wound documentation for the coordination of care, the HHA can distinguish itself from the competition and attract more patients.

Education Implications

The DNP project's findings not only have implications for nursing practice and patient care but also have educational implications for the HHA in Southeast Florida. The statistically significant impact of the wound documentation education modules on nurses' knowledge and practices highlights the importance of targeted education initiatives. Building on these findings, the HHA should continue developing evidence-based modules that specifically address the areas of improvement identified in the project. By tailoring educational programs to address specific

needs, nurses can enhance their skills and knowledge in wound management, documentation, and coordination of care.

An important aspect of the educational implications is the emphasis on ongoing education and training for nurses. To achieve its strategic goals, the HHA should establish a continuous education program to keep nurses updated with the latest evidence-based practices, guidelines, and quality improvement initiatives in wound care documentation and other relevant areas. Regular training sessions, workshops, and webinars can ensure nurses are informed about best practices and can continually enhance their skills.

The project's positive outcomes, such as improved documentation efficacy, coordination of care, and patient outcomes, can be integrated into the HHA's quality improvement initiatives. Regular audits and evaluations of wound documentation practices will help identify areas for improvement and ensure consistent, high-quality patient care. Prioritizing patient outcomes and providing evidence-based care will be essential in achieving the strategic goal of doubling the HHA's census.

To continually assess the effectiveness of its education program, the HHA should conduct regular evaluations through posteducation surveys and assessments. By gathering feedback from participating nurses and tracking changes in documentation practices and patient outcomes, the HHA can measure the impact of its education initiatives and make necessary adjustments for continuous improvement. It is also essential to share the project's findings within the organization to recognize the education program’s benefits and motivate staff to participate in future initiatives actively. The DNP student shared the project’s findings in person on July 20, 2023, at an HHA staff meeting.

In conjunction with the strategic plan's focus on marketing the HHA's expertise in managing wounds, especially complex wounds, the regional director and clinical manager should explore additional metrics to measure wound outcomes, such as wound healing time. The HHA can provide concrete evidence of its capabilities by capturing relevant wound outcome metrics, differentiating itself from the competition, and attracting more patients to achieve its census growth goal.

Policy Implications

The project's findings have implications for the HHA's policies, aligning with its strategic plan to double its census. These policy implications can enhance patient care, improve overall healthcare outcomes, and distinguish the HHA as a leader in complex wounds. A focused policy area that the HHA should focus on is education and training. To achieve its strategic goal and provide high-quality care, the HHA should prioritize comprehensive education and training policies for nursing staff, specifically in wound documentation, for the coordination of care. Ensuring nurses receive regular and up-to-date education will improve patient outcomes and a higher quality of care.

The HHA should develop policies that promote seamless coordination among nurses, physicians, healthcare providers, patients, and caregivers. Implementing standardized communication protocols and guidelines will enhance patient safety and continuity of care, contributing to the HHA's reputation and attracting more patients. The HHA should support teamwork and communication among nurses, therapists, social workers, and other providers to enhance the coordination of care and deliver comprehensive patient care, further contributing to positive patient outcomes.

The project's positive impact on patient outcomes and quality reporting measures suggests the need for quality improvement policies. The HHA can drive better patient outcomes and improve its services by emphasizing data-driven decision-making and continuous evaluation of care practices. The HHA should prioritize policies that actively engage patients and caregivers in the coordination of care process, encouraging shared decision-making and involving them in care planning. By promoting patient satisfaction and treatment adherence, the HHA can attract more patients and strengthen its position in the market.

The DNP project's findings provided valuable insights for the HHA in Southeast Florida, highlighting essential areas to support and improve nursing practice. By focusing on education, documentation efficacy, patient outcomes, CE, and compliance with quality reporting measures, the HHA can enhance the overall quality of care for home health patients. Implementing these educational implications will improve the nursing staff's skills and knowledge, resulting in better patient care outcomes and a commitment to evidence-based practices and continuous improvement. Additionally, addressing various policy implications will optimize wound management for the coordination of care practices, leading to better patient outcomes, enhanced quality of care, and improved healthcare delivery.

Implications of Findings for Nursing Practice

Practice Implications

Based on the project findings, there are several implications for nursing practice. Nurses should focus on wound documentation for the coordination of care education. The project showed that the educational modules significantly impacted nurses' knowledge of wound etiology, PU staging, wound plan of care, and the influence of wound documentation on the

coordination of care. These findings emphasize the need for ongoing education and training to enhance wound documentation practices for the coordination of care.

The project findings showed improved documentation efficacy and coordination of care for wound management. Nurses should recognize the importance of accurate and comprehensive wound documentation in facilitating communication among care team members, physicians, and patients/caregivers. Effective coordination of care can lead to better patient outcomes and shorter lengths of stay.

The project findings showed that the wound documentation education intervention was associated with a decreased ALOS for home health patients receiving wound care. This decrease suggests that improved wound documentation for the coordination of care can positively impact patient outcomes and contribute to quality improvement initiatives in healthcare settings. Nurses should be mindful of compliance with quality reporting measures and guidelines to ensure the delivery of high-quality care and positive patient outcomes. The project findings showed a decrease in the CMS Home Health Quality Reporting Outcome Measure related to wounds, highlighting the importance of adhering to such measures.

Education Implications

The project's findings have implications for nursing curricula that can better prepare future nurses to provide high-quality wound care and contribute to improving patient outcomes and overall healthcare quality. One crucial implication is the incorporation of wound documentation for the coordination of care education. The project findings showed that the education modules positively impacted nurses' knowledge and care practices. Including comprehensive education on wound documentation and coordination of care in nursing curricula will equip students with essential skills and knowledge needed for effective wound care.

Coordination of care and interdisciplinary communication are also implications. The project findings highlighted the significance of effective communication among care team members, physicians, and patients/caregivers. Nursing curricula should prioritize developing students' skills in coordination of care and interdisciplinary collaboration to improve patient outcomes and provide holistic care.

Quality improvement principles and methodologies should be integrated into nursing curricula to promote data-driven decision-making and continuous evaluation of care practices. Students will be better prepared to contribute to healthcare improvements and enhance patient outcomes by understanding quality improvement concepts. Nursing curricula should incorporate IPE opportunities. Wound care often involves collaboration with various healthcare professionals, and engaging nursing students in IPE experiences encourages teamwork and enhances their ability to work collaboratively with others.

Technology and EHRs play an important role in data management and documentation practices. Nursing curricula should include training in using technology and EHR systems to promote efficient and accurate patient care. To ensure nursing curricula remain relevant, they should be continuously updated to reflect current best practices and evidence-based guidelines. Nursing programs should adapt their curricula as wound care and documentation practices evolve. Nursing curricula should emphasize gathering student feedback through module evaluations and other assessment methods. This feedback can help educators assess the effectiveness of educational interventions and identify areas for improvement in the curriculum.

Policy Implications

The findings from the DNP project have implications for public policy in healthcare and wound management. Public policymakers should consider allocating funding and resources to

support healthcare education initiatives, specifically focusing on wound documentation for the coordination of care. Investing in education and training for healthcare professionals can lead to improved patient outcomes, reduced healthcare costs, and overall quality improvement.

There should be continued emphasis on quality reporting and performance measures in public policy. The project findings showed a decrease in the CMS Home Health Quality Reporting Outcome Measure related to wounds, implementing the wound documentation education intervention. Policymakers should incentivize healthcare providers to maintain high standards of care and improve patient outcomes by valuing and encouraging quality reporting.

Public policy should actively support evidence-based practice in healthcare settings. This support can be achieved through funding research and initiatives promoting evidence-based care and incentivizing healthcare organizations to implement evidence-based practices and interventions. Facilitating interdisciplinary collaboration among healthcare professionals is another important aspect policymakers should promote. Policies encouraging teamwork and coordination among nurses, physicians, therapists, and other healthcare providers can lead to improved patient outcomes and better utilization of resources.

The project highlighted the importance of integrating health information technology, particularly data analysis and using EMRs in wound management. Policymakers should continue to support the integration of health information technology in healthcare settings to facilitate data management, enhance documentation practices, and ultimately improve patient care. Additionally, public policy should actively promote and incentivize quality improvement initiatives in healthcare. These policies can involve providing financial incentives for healthcare organizations that demonstrate improvements in patient outcomes and care practices and supporting initiatives focusing on continuous quality improvement. Public policy should

emphasize patient-centered care and encourage healthcare providers to involve patients and their caregivers in the coordination of care. Policies prioritizing patient engagement and shared decision-making can improve treatment adherence and patient outcomes.

The project's findings highlight the importance of continuous education, accurate documentation, and effective coordination of care in wound management. Nurses play a vital role in enhancing patient outcomes and ensuring high-quality care. By being well-informed about wound care, data analysis, and quality reporting measures, nurses can significantly contribute to healthcare improvements and patient well-being. Incorporating these implications into nursing curricula can equip future nurses with the necessary knowledge and skills to provide high-quality wound care, engage in evidence-based practice, and make meaningful contributions to healthcare outcomes and quality. Public policy plays a crucial role in shaping healthcare and impacts patient care. By embracing evidence-based practices, promoting interdisciplinary collaboration, investing in healthcare education, and supporting quality improvement initiatives, policymakers can support improved wound management practices, better patient outcomes, and overall enhancements in the healthcare system.

Implications of Findings Related to the DNP Essentials

The DNP essentials are the fundamental components that DNP programs adhere to. They outline the curricular elements and required competencies that must be present for programs granting the DNP degree (AACN, 2006). The DNP essentials played a crucial role in guiding the development and execution of this DNP project. The implications of the project findings related to the DNP essentials are as follows.

Scientific Underpinnings for Practice

The DNP project focused on wound documentation education for the coordination of care. The project's scientific underpinnings were based on data analysis, statistical tests, and evidence-based measurement instruments to assess the intervention's impact on wound management. The project contributes to the scientific foundation of nursing practice by employing rigorous data analysis and evidence-based practices.

Organizational and Systems Leadership for Quality Improvement and System Thinking

The DNP student's role as the principal investigator reflected organizational leadership in implementing the wound documentation education intervention. The project's emphasis on quality improvement, evidenced by improved patient outcomes and decreased length of stay, showcased the DNP's ability to lead and contribute to system-level improvements in healthcare organizations.

Clinical Scholarship and Analytical Methods for Evidence-Based Practice

The project utilized analytical methods, such as the Wilcoxon signed-rank test and relative change analysis, to evaluate the wound documentation intervention's effectiveness. By employing these analytical methods and applying evidence-based practices, the DNP student demonstrated clinical scholarship and the ability to translate research findings into practice.

Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care

The project's use of technology, specifically EHRs for data analysis and wound documentation, aligned with the DNP essential of leveraging technology to improve and transform healthcare. Integrating technology into wound management practices enhances data management, documentation, and quality reporting.

Health Care Policy for Advocacy in Health Care

The project's findings have implications for healthcare policy, including the importance of wound documentation education, interdisciplinary collaboration, and quality improvement initiatives. The DNP project advocated for evidence-based wound management practices and policies promoting better patient outcomes and improved healthcare quality.

Inter-Professional Collaboration for Improving Patient and Population Health Outcomes

The project's emphasis on coordination of care highlights the significance of interprofessional collaboration in wound management. This DNP project aligned with the essential of interprofessional collaboration by recognizing the importance of effective communication among care team members and involving patients and caregivers in the coordination of care process.

Clinical Prevention and Population Health for Improving the Nation's Health

Although the project focused on wound management in a specific HHA, the findings related to improved patient outcomes and reduced length of stay have implications for population health. Effective wound management practices can contribute to better overall health outcomes for the population served by the HHA.

Advanced Nursing Practice with Advanced Cognitive and Experiential Knowledge Necessary to Demonstrate Expertise in Practice Preparation in a Specialized Area Within a Larger Domain of Nursing

The DNP project demonstrated the application of advanced nursing practice principles in wound management for the coordination of care. The DNP student exemplified the advanced nursing practice role in improving patient care and healthcare systems by implementing the

wound documentation education intervention, conducting data analysis, and evaluating the impact on patient outcomes.

Impact of the DNP Project

Approximately 30% of home health patients have wounds, and nearly half of wound documentation lacks crucial details on assessment and intervention. A retrospective chart audit revealed that 75% of the medical records at a HHA in Southeast Florida had incorrect wound classifications, 60% lacked documented coordination of the care related to wound management, and 100% of wound documentation showed some knowledge gap in wound description, type, and etiology. This DNP project intervention significantly improved nurses' knowledge of wound documentation for the coordination of care and improved documentation efficacy. The following sections review the DNP project intervention regarding the education intervention's adoption, continuation, and expansion. Additionally, recommendations related to the sustainability plans of the HHA in Southeast Florida and other settings, and reflections on the lessons learned by the DNP student, are discussed.

Recommendations for Adoption and Expansion of the DNP Project

TCHHE, the HHA in Southeast Florida, and the participants in this DNP project supported the project as they understood the need for the educational intervention and benefits to the nurses, patients, and HHA. The HHA has adopted the education intervention and its components of wound documentation education, utilizing the pre and posttests and the education modules evaluation at both locations in Southeast Florida.

Before the DNP project educational intervention, the HHA did not have a formal wound documentation education program. The project findings showed positive outcomes regarding significant improvement in wound documentation for the coordination of care knowledge among

the nurses. The findings indicate that the educational intervention was effective, with a statistically significant increase in the aggregate score from the pretest to the posttest ($p = .003$). Therefore, adopting the DNP project within the current HHA is recommended to ensure all nurses receive the necessary training and knowledge enhancement in wound care.

The posteducational intervention module evaluation scores assisted in assessing the viability of the educational approach used for the DNP project intervention for future HHA education modules. Positive feedback from the nurses regarding this education method ($M = 4.73/5$) indicated that the online approach could be sustained and implemented in future modules. This level of satisfaction suggests other educational modules on different topics may also result in similar satisfaction and contribute to long-term sustainability.

The DNP student recommends the continuation of wound documentation chart audits. The posteducation chart audit demonstrated improvements in documentation efficacy and care coordination (24 of 28 measures' scores were higher postintervention than preintervention). It is recommended to continue conducting chart audits periodically to sustain these improvements and identify potential areas for further improvement. The continued audit will monitor the educational intervention's implementation and track the progress over time. Overall, the data support the adoption and expansion of the DNP project, focusing on continuous evaluation, improvement, and collaboration with stakeholders to ensure sustained positive outcomes in wound care documentation for the coordination of care.

The DNP student recommends expanding the educational intervention to all HHC staff who provide wound care. Because the DNP project has shown positive results in improving knowledge and patient outcomes, expanding the project to include all eligible staff, not only nurses, is recommended. By doing so, home health agencies can ensure a more comprehensive

and consistent approach to wound care documentation for the coordination of care, leading to better patient outcomes. The DNP student shared the written executive summary with the new owners and regional director of operations on June 8, 2023, via email. The new owner replied, "That's great news. Thanks for sharing your work with us and for supporting what we are building. We appreciate all you do to help us." The new owners and regional director of operations were grateful for being a part of the DNP project and helping the HHA move closer to achieving its strategic goal of being the top HHA for wound care in their service area.

On July 17, 2023, the DNP student attended a staff meeting, in person, at the HHA in Southeast Florida, where the findings of the DNP project were shared. The findings shared included the data analysis, interpretation of findings, and importance of the statistically significant findings. The regional director of operations and clinical manager shared their excitement about the project in front of the nurses and the intent to continue the DNP project educational intervention beyond the DNP doctoral phase. The regional director of operations and clinical manager also stated that they intended to assign the wound documentation modules to new hires and nurses who may need a refresher.

Sustainability Plan

Sharing the executive summary with the HHA's leadership and nurses was the foundation for sustainability. The positive feedback from the nurses, increased knowledge of wound documentation for the coordination of care, and improved documentation efficacy add to the likelihood of maintaining the DNP project intervention at the HHA in Southeast Florida. Providing this project's education modules online through Kajabi was an inexpensive and convenient way to provide education and manage the content. The online modality made the modules easily accessible anytime from anywhere on any device and made it easy to manage the

content in-house. In the rapidly changing healthcare environment, managing the content in-house and being able to update the content immediately ensured the learners were receiving current evidence-based education. Managing the education content in-house also allowed for quick changes to the content based on participants' feedback through the posteducation module evaluations. TCHHE plans to continue using Kajabi to provide online education. The issue of exporting quiz data has been discussed with the support team at Kajabi. The support team stated there is a workaround using specific programming available.

TCHHE's strategic plan is to create a home health nurse certification program, with Phase 1 offering CE credit through ANCC and Phase 2 seeking certification approval through the Accreditation Board for Specialty Nursing Certification. This DNP project's education modules were two modules of the planned home health nurse certification program. The findings of this project will be used to support grant applications to cover expenses for creating and providing a home health nurse certification program.

The regional director of operations, new owners, and clinical manager at the HHA in Southeast Florida supported this project and its purpose. Through discussions with the regional director and clinical manager, documentation of wounds emerged as a concern. Approximately 20% of the HHA's patients had a wound. The HHA's strategic plan for the year is to double its census. Part of the marketing plan is to use internal data to show how they are better than the competition at managing wounds, especially complex wounds. The regional director and clinical manager are looking into additional metrics they can capture to measure wound outcomes, such as wound healing time. The wound documentation tool used in this project was developed using evidence-based guidelines and left with the HHA for future use. The online education modules are available to the HHA staff for future use.

Reflection of Lessons Learned

The primary lesson learned was that relationships go a long way. As the project unfolded, it became evident that strong relationships were at the core of its success. The project involved various stakeholders, including the HHA's leadership, nurses, and other healthcare professionals.

Establishing a positive and collaborative relationship with the HHA's leadership was fundamental in gaining support and resources for the project. Trust was built by effectively communicating the project's objectives and potential benefits, which led to their backing of the initiative. Establishing a connection with the nurses by attending their staff meetings in person played a role in driving the project's success. These nurses are the front-line providers of wound care, and their active involvement and engagement in the project were vital to the project's success. By creating an environment where their voices were heard, concerns addressed, and contributions acknowledged, they became motivated and committed to the project's goals.

Collaborating and maintaining open lines of communication with the HHA leadership, faculty advisor, practice mentor, subject matter experts, and Kajabi help desk was invaluable. The project's success hinged on effective interdisciplinary teamwork and information sharing, allowing for a comprehensive approach to the wound documentation education intervention. The primary takeaway from this DNP project was that relationships are the foundation of any successful initiative. Building strong connections with various stakeholders cultivated a supportive and cooperative environment, improving outcomes and long-term sustainability. Recognizing the significance of relationships and prioritizing their cultivation should be a guiding principle for future endeavors in healthcare and beyond.

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Appendix A

Rasmussen IRB Approval Letter

RASMUSSEN
UNIVERSITY

March 30, 2023

Dear Kimblery Mulquin-Shumway:

This letter grants you approval from the Rasmussen University Institutional Review Board (IRB) to begin your planned study/project for your DNP program, which involves "Using Online Education to Improve Wound Documentation for the Coordination of Care in the Home Health Setting." Rasmussen University's IRB reviewed your application and related materials on March 22, 2023. Thereafter, you provided further clarification in response to various questions from the IRB. After your responses were shared with the IRB members, support was granted by Board vote.

Your study/project plans must be implemented in the manner described in your Rasmussen University IRB application and related information and as indicated in your additional responses, and must align with the materials presented to the Rasmussen Institutional Review Board. Also, as you are aware, your study must meet the requirements set by the Home Health Agency (HHA) in SE Florida and the Center for Home Health Excellence. You should also continue to work closely with Dr. Tami Rogers, your Faculty Advisor.

Any proposed use or publication of the project or findings above and beyond that needed for the completion of your DNP degree must be routed to me for consideration by the Rasmussen University Institutional Review Board and for any possible, specific approval that may be needed at that time. This approval remains in place for one year from the date of this letter. I wish you all the best as you prepare to complete your project.

Sincerely,

Matthew Segaard, Ph.D. / Assistant Vice President of Institutional Research & Assessment
Chair, Institutional Review Board
Rasmussen University – Twin Cities Office
Office: 952-806-3913

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Appendix B

Consent to Participate in a DNP Project

Project Title: Using Online Education to Improve Wound Documentation for the Coordination of Care in the Home Health Setting

DNP Student: Kimberly Mulquin-Shumway, MSN, MBA, RN, CPHQ, DNS-CT, LSSMBB

Introduction

You are invited to participate in a Doctor of Nursing Practice (DNP) project. This consent form will provide information on the project, what is expected of you, and the associated risks and benefits. Your participation in the education module portion is mandatory per your employer; however, participation in the pre and posttest and evaluation is voluntary. Your participation in this project allows you to expand your knowledge of wound documentation and coordination of care and help us gain valuable insights into nursing practice which can be used to improve patient outcomes. We appreciate your willingness to take part in this project.

It is important to read and understand all the information provided in a form before making any decisions. Taking the time to ask questions and ensure you fully understand the project will help you make an informed decision. Knowing what is expected of you, what resources are available, and what the timeline for completion looks like will help you make a wise choice when deciding whether to participate.

Purpose:

This project seeks to assess the effectiveness of an online educational program designed to improve wound documentation and coordination of care. By measuring test scores before and after completing the program, we will be able to determine whether the program has had a positive impact on participants' knowledge in these subject areas.

Procedure:

If you agree to participate in this project, you will be asked to provide some demographic information and take a 20-question pretest on wound documentation and coordination of care. This is essential for us to understand participants' level of knowledge and experience to ensure the project's accuracy and effectiveness.

In addition, you are required to complete the online education modules. These modules are designed to provide you with the necessary knowledge and skills related to wound documentation and coordination of care. Once you have completed the modules, you will be asked to take a posttest, which will assess your understanding of the material covered in the modules. The total time involved should take approximately 2-1/2 hours to complete, and it does not need to be finished in one sitting. You may stop at any time and return later if you would like.

Once you agree to participate, by clicking on "I agree," you will be linked to the demographic and 20-question pre-test. After completing the modules, you will be taken to the posttest. After completing the posttest, you will be taken to the modules' evaluation.

Benefits:

Participating in this project will allow you to expand your knowledge of wound documentation and coordination of care. You will better understand how these processes can improve patient outcomes. Additionally, you will be able to learn more about the different techniques used in wound care and how they can be applied in the home health setting. By participating in this project, you will gain valuable insights into how wound documentation and coordination of care can help improve patient outcomes.

Risks and Discomforts

Participating in this project is safe and secure, with no anticipated risks or discomfort. We understand that fatigue can be an issue, so if you become fatigued at any point, you may stop and return to the project later.

Additionally, if you decide that you no longer wish to participate, you may withdraw from the project at any time without penalty or repercussions. You may discuss any concerns you have with the DNP student.

Privacy, Anonymity, and Confidentiality

To ensure the privacy and anonymity of your pre and posttest data comparison and module feedback, you will be instructed to enter the first three letters of your mother's name and the first three numbers of your mobile phone number. This will allow us to compare the results without disclosing any personal information. This method ensures that all participants are treated fairly, and their privacy is respected.

Only the DNP student and Practice Mentor will have access to the Kajabi account to ensure the confidentiality of the data collected during the project. Kajabi allows for confidential and anonymous collection of information with guarantees of reliability and security as posted on their website in their privacy policy statement. All test results will remain on Kajabi, allowing for secure storage and retrieval when needed. This ensures that all data collected remains confidential and secure.

Contacts and Questions

If you have any questions or concerns about this project, you may contact Kimberly Mulquin-Shumway at 941-223-7483 or kimberly.mulquinshumway@smail.rasmussen.edu. The Rasmussen University Institutional Review Board has approved this project. If you have any

questions about your rights as a participant or complaints about the project, you may call the IRB at 952-806-3900.

By clicking “Mark As Complete” above, you confirm that you have read the above document, been given the opportunity to ask questions, understand the risks and discomforts associated with the project, and understand that you may withdraw participation at any time without penalty. If you do not agree to participate, please exit this window.

Appendix C

Module 1

Module 1: Assessment Fundamentals

CONTENT	TIME	LEARNER ENGAGEMENT STRATEGIES
A. Importance of Appropriate Wound Management in Home Health a. Improved patient outcomes b. Agency quality scores improve. c. Patient Satisfaction	5 min	Lecture
B. Fundamentals of Wound healing a. Primary b. Secondary c. Tertiary Intention d. Stalled wounds e. Infected wounds	20 min	Lecture, photograph examples, interactive questions
C. Common types of wounds seen in home health a. Surgical b. Pressure c. Lower extremities i. Venous ii. Arterial iii. Diabetic foot ulcer	30 mins	Lecture, photograph examples, interactive questions
D. Comorbid conditions and how they may affect wound healing a. Diabetes b. Peripheral vascular disease	5 mins	Lecture

CONTENT	TIME	LEARNER ENGAGEMENT STRATEGIES
E. Conclusion – summary	5 mins	Summary

Appendix D

Module 2

Module 2: Assessing and documenting wounds in Home Health

CONTENT	TIME	LEARNER ENGAGEMENT STRATEGIES
A. Wound appearance a. Wound bed i. Healthy tissue ii. Devitalized tissue iii. Wound edges iv. Peri wound appearance v. Drainage type and amount b. Measurement c. Plan of care d. Assessing progression of healing e. Coordination of care	35 min	Lecture Photographs Interactive questions
B. Product selection for optimal wound healing environment a. Product classification i. Gauze ii. Semi-permeable films iii. Hydrogels iv. Foams v. Composites vi. Hydrocolloids vii. Interactive dressings viii. Debriding agents	15 mins	Lecture Photographs Interactive questions
C. Product wear time determination a. Assessment of effectiveness b. When to change dressings		Lecture

CONTENT	TIME	LEARNER ENGAGEMENT STRATEGIES
	10 mins	
D. Summary, Conclusion	5 mins	Summary

Appendix E

Pre/Posttest Questions

Objective: Identify wound etiology and type (4)

1. Venous ulcers are commonly:
    a. Deep and circular
    b. Superficial, irregularly shaped
    c. Necrotic
    d. Found on the toes and toe webs.
2. Pressure ulcers are caused by unrelieved pressure on the skin and usually located over bony prominences.
    a. True
    b. False
3. A diabetic foot ulcer is:
    a. A blister on the heel where the shoe rubs
    b. A round red crater on the foot of a patient with diabetes bordered by thickened, calloused skin
    c. Related to diabetic neuropathy.
    d. B and C
4. Arterial ulcers are commonly:
    a. Deep and circular with a punched-out look
    b. Superficial, irregularly shaped
    c. Necrotic
    d. Found on the toes and toe webs.

Objective: Distinguish the different stages of pressure ulcers (3)

5. Full thickness tissue loss where the depth of the ulcer is fully obscured by slough/eschar in the wound bed is graded as:
    a. Stage III
    b. Stage IV
    c. Unstageable
    d. Suspected deep tissue injury (sDTI)
6. A pressure ulcer that presents as a blister with partial thickness skin loss of the dermis is graded as:
    a. Stage I
    b. Stage II
    c. Stage III
    d. Stage IV
7. A pressure ulcer that presents as a deep crater with full-thickness tissue loss is graded as:
    a. Stage I
    b. Stage II
    c. Stage III
    d. Stage IV

Objective: Identify the signs and symptoms of infection (1)

8. Signs that a wound may be infected include:
    a. Swelling and redness, pain, and tenderness
    b. Odor and oozing from the wound.
    c. None of the above
    d. A and B

Objective: List the steps to assess a wound (2)

9. When measuring a wound:
    a. Measure widest area of wound and longest length of wound.
    b. Measure depth in the deepest aspect of the wound to the skin level
    c. Both A and B
    d. None of the above
10. If you see multiple colors in a wound bed, you should describe the wound according to the:
    a. Percentage of each color
    b. Healthy color seen.
    c. Color most visible
    d. Darkest color seen.

Objective: List all the required components of wound documentation (3)

11. Wound documentation should include:
    a. Size of wound (width, length, depth)
    b. Location of wound
    c. Odor and drainage, including color and amount.
    d. Description of surrounding tissue
    e. All the above
12. If you are not changing the wound dressing, you still need to document the wound.
    a. True
    b. False
13. If you are not changing the dressing, how do you document the wound?
    a. Location of the wound

b. Status of dressing (e.g., dry and intact)

c. Presence of drainage

d. Condition of skin around dressing

e. All the above

Objective: Complete a wound plan of care based on wound type (3)

14. Wound dressings and treatment should be based on:

a. Wound etiology, location, and size.

b. Exudate amount and wound bed tissue involvement

c. Patient preference

d. A and B

e. All the above

15. Which of the following repositioning techniques is key in preventing pressure?

a. Turning patients at least every two hours while in bed

b. Repositioning patient confined to a chair at least hourly.

c. Floating heels

d. Padding bony areas

e. All the above

16. A wound should be assessed:

a. Daily

b. Weekly

c. When changing the dressing

d. Every home health visit

e. C and D

Objective: Recognize how wound documentation impacts the coordination of care (4)

17. Wound documentation should include:
    a. Communication to physician
    b. Communication to patient
    c. Communication with care team.
    d. All the above
18. If the ordered treatment for wound care does not match the wound type, what should you do?
    a. Question the ordering physician.
    b. Call the physician's office to verify treatment.
    c. Nothing, the physician knows what they are doing.
    d. Follow agency policy.
19. A physical therapist or home health aide involved in the care of the patient should look at the wound dressing and notify the nurse if there are any concerns.
    a. True
    b. False
20. If a wound appears not to be healing, what should you do?
    a. Change the treatment plan.
    b. Contact the ordering physician.
    c. Send the patient to the emergency room.
    d. None of the above

Appendix F

Organization Letter of Support

Letter of Support

Health at Home
3557 SW Corporate Parkway
Palm City, FL 34990
772-288-7386

2/23/2023

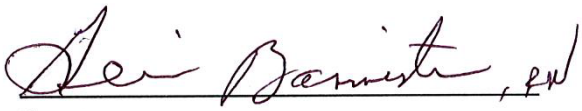
Dear Rasmussen University IRB:

On behalf of Health at Home, I am writing to grant permission for Kimberly Mulquin-Shumway, a DNP student at Rasmussen University, to conduct her DNP project titled, "Using Online Education to Improve Wound Documentation for the Coordination of Care in the Home Health Setting."

I understand that Kimberly Mulquin-Shumway will provide online education modules on wound documentation and coordination of care via an online platform for Health at Home between April 10, 2023, and May 5, 2023. She will also conduct post-education chart reviews between May 6, 2023, and June 3, 2023.

We are happy to participate in this DNP project and contribute to this important work. Therefore, as a representative of Health at Home, I agree that Kimberly Mulquin-Shumway's DNP project may be conducted at our agency.

Sincerely,



Signature

FL Regional Director of Operations

Title

Appendix G

Organization Emails

Initial email to the Regional Director of Operations with cc to Practice Mentor

Hi [Name of Regional Director of Operations],

Here is the link to the wound documentation training in Kajabi. As discussed, please forward the link to the nurses.

Thank you and have a wonderful day!

Kim

Weekly email to the Regional Director of Operations with cc to Practice Mentor

Hi [Name of Regional Director of Operations],

As of [Saturday's date], there are X nurses who have created an account in Kajabi. X are in process and X have been completed.

Thank you and have a wonderful day!

Kim