2021

Nurses' Knowledge and Perception of Resident Mobility in Long-Term Care Facilities

Mary P. Forster
University of Massachusetts Amherst

DNP Project Final Write Up

Nurses' Knowledge and Perception of Resident Mobility in Long-Term Care Facilities

Mary Patrice Forster

University of Massachusetts Amherst College of Nursing

DNP Project Chair: Hyeyoung Park, Ph.D, RN

Mentor: John Kplforia, DNP, RN

Date of Submission: April 9, 2021

Table of Contents

Abstract

Background: Decreased mobility for patients in long-term care (LTC) can lead to a slew of health-related issues such as sedentariness, cognitive decline, increased falls, and pressure injuries. Lack of perception and/or knowledge of the importance of mobility can lead to care of omission by nurses towards their patients. Educational interventions are effective to increase nurse's knowledge base and perceived importance of resident mobility.

Purpose: The purpose of this quality improvement project was to assess the effect of an in-person educational intervention on the nurses' perception and understanding of the importance of mobility for LTC residents.

Methods: One thirty-minute PowerPoint educational intervention was developed based on the most recent recommendations form several evidence-based peer reviewed articles. It was completed by 31 nurses throughout eight sessions over a two-day period in December 2020. Participants completed five perception questions and five knowledge base questions before and after the educational intervention. The effectiveness of intervention was analyzed using a paired t-test for perception questions and McNemar's P-test for knowledge base questions.

Results: Thirty-one participants completed the pre and post education questionnaire. Results showed that there is a positive perception increase and at least a 50% increase in knowledge scores after the educational intervention.

Conclusion: An in-person educational intervention had a positive impact on LTC nurses' perception and knowledge towards mobility. Future projects should focus on sustainment of this through annual competencies.

Keywords: education, nurses' perception, mobility, mobility in nursing homes, nurse knowledge, nurse understanding

Nurses' Knowledge and Perception of Resident Mobility in Long-Term Care Facilities

Introduction

Decreased mobility for patients can be very detrimental to their health. Lack of physical activity and prolonged bed rest have significant negative effects on multiple systems. Over time, the loss of lean tissue can contribute to decrease in muscle strength and power, which can affect balance and increase the occurrence of falls (Dirkes & Kozlowski, 2019). Lying down shifts 11% of the total blood volume away from the legs, with most of it going to the chest (Dirkes & Kozlowski, 2019). This shift can lead to an increase in cardiac workload, elevation of resting heart rate, and a decrease in the heart's ability to pump, resulting in a reduction of cardiac output (Dirkes & Kozlowski, 2019). In the United States, 1 of 200 hospitalized elderly patients (0.5%) have experienced pulmonary embolisms which may have resulted in death (Dirkes & Kozlowski, 2019).

According to the Illinois Council on Long Term Care, many older persons enter nursing homes in dire physical condition (Illinois Council on Long Term Care, n.d.). The National Institute on Aging released revealing statistics about elderly beyond the age of 75 regarding their limited physical abilities: 40% cannot walk two blocks, 32% cannot climb ten steps, 7% cannot walk across a small room and 50% of older people who fracture hips never walk independently again, and many of them die from complications (Illinois Council on Long Term Care, n.d.). Almost 90% of residents living in long-term care (LTC) facilities have limited mobility which is associated with a loss of ability in activities of daily living, falls, increased risk of serious medical problems such as pressure ulcers, incontinence, and a significant decline in health-related quality of life (Slaughter et al., 2013).

Nurses' perception and knowledge base influenced patient care pertaining to mobility in LTC facilities (Kanaskie & Snyder, 2018). Studies indicated that nurses who have negative perception and low levels of knowledge towards a topic, put their patients at greater risk for error of omission (Evripidou et al., 2019). Poghosyan et al. (2017) defined error of omission as "failure of the right action such as missed care and gaps in care" (p. 734). Nurses have a key role in the improvement of the quality of care as they are the ones who spend the most time with patients (Evripidou et al., 2019). Thus, this QI project aimed to improve nurses' perception and knowledge base of immobility in LTC.

Background

Maintaining mobility has a profound effect on the physical and psychological well-being of the older adults. Disuse or immobility results in complications in almost every body systems, which may expedite or exacerbate disability and illness. Some effects of immobility include increased stress on the heart, orthostatic hypotension, pooling of secretions in the lungs, muscle atrophy and weakness, pressure injuries, urinary complications, feelings of helplessness, depression, and anxiety (Illinois Council on Long Term Care, n.d.). Consequences of immobility can begin during a resident's hospital duration.

Hospitalized seniors lose up to 5% of their muscle strength daily (Stall, 2012). Compared with more active and mobile hospitalized counterparts, immobile seniors are six times more likely to be discharged to long-term care (LTC) facilities (Stall, 2012). Furthermore, immobile seniors are 34.3 times more likely to die in hospital (Stall, 2012). In one study, 35% of the 2,279 hospitalized elderly patients reviewed, were discharged with hospitalization-associated disability and within a year; 41.3% of those had eventually died shortly after (Stall, 2012). Approximately 33% of the patients had severe functional deterioration at time of discharge compared to their

status before hospital admission (Kosse et al., 2013). For patients 90 years or older this number increased to 63% (Kosse et al., 2013). Functional decline during and after hospital stay has shown to be an important risk factor for nursing home placement (Kosse et al., 2013)

Mobility improvement has long-term economic and health benefits. LTC recipients who undertook more steps per day recorded less functional limitation and showed improvement in the quality of their lives (Kabiri et al., 2018). Improvement in the mobility of the LTC recipients was also associated with improvement in the cost or medical-related expenditure (Kabiri et al., 2018). The more steps a resident makes per day translated to enhanced skeletal power and enhanced independence (Kabiri et al., 2018). This is because doing more steps per days translated to stronger leg muscles and skeletal muscles. The residents who improved in their mobility levels were less likely to withstand medical complications (Kabiri et al., 2018). Improved mobility could enhance a reduction in costs associated with pressure injuries, urinary incontinence, and falls. Residents who were independent due to their mobility tended to have a better quality of life (Kabiri et al., 2018).

The Banner Mobility Assessment (BMAT) is an evidence-based nurse-driven mobility assessment tool. BMAT identifies the patient's mobility level and guides nurses to recommend the safe patient handling and mobility technology appropriate for the patient (Boynton et al., 2014). When using the BMAT, mobility levels are assessed by the nurse once per shift and care plan is updated accordingly. While the BMAT is necessary for developing a nurse-driven mobility protocol, still little is known about the current perception or knowledge gap regarding mobilization practices of nurses (Constantin & Dahlke, 2018). Barriers related to nurses mobilizing their patients have been identified as nurses believing it is physical therapy’s role to own this process as well as lack of confidence in the decision-making process behind initiating

mobility (Brown et al., 2009). Patients who are dependent on care due to physical limitations are at the highest risk of low mobilization rates (Boltz et al., 2012). Additionally, patients living in nursing homes are at greater risk of decompensation than older persons living at home (Turan et al., 2012).

Problem Statement

The negative effects of immobility in the long-term care (LTC) population are vast. If nurses do not fully understand these negative effects of immobility, they continue to participate in omission of mobility care. Constantin and Dahlke (2018) findings revealed that education about patient mobilization can improve nurses' willingness to mobilize patients. The purpose of this Quality Improvement (QI) initiative was to examine the effect of a 30-minute PowerPoint educational intervention completed by nurses on improvement of nurses' perceptions and knowledge about the importance of mobility for LTC residents.

Organizational "Gap" Analysis of Project Site

A gap analysis was completed by this DNP student in March 2020. The gap analysis followed the standards set forth by the Agency for Health Care Research and Quality (AHRQ 2016). The Communication and Optimal Resolution (CANDOR) Gap Analysis Document Review Checklist was used when collecting documents (see Appendix A) ("Communication and Optimal Resolution", 2016). Five separate one-hour sessions occurred. Prior to the focus group session, participants were assured that the feedback they provide would be confidential. Separate groups were formed as the follows:

- Front-line nursing – Twelve nurses over two sessions
- Nurse managers – Four nurse managers over two sessions
- Director level – One nursing director in one session

A detailed summary of the focus group findings can be found in Appendix B. Most interesting, there was no a policy or procedure for a nurse driven mobilization program. All mobilization activities were either physical therapy driven or at the nurses' discretion. Upon assessing the focus group sessions, there were several themes that were evident. There was no expectation for nursing staff to mobilize patients without physical therapy present. Most nurses did not recall formalized education surrounding the importance of mobility. Nurse managers believed other competing priorities, such as medication administration and wound care treatments, would always take priority over mobilization. The Director of Nursing felt mobility was important and was willing to discuss avenues on how to increase this at their facility. The gap analysis revealed significant opportunity for this educational event.

Review of the Literature

A search of the literature was conducted to identify research articles on the efficacy of utilizing an educational intervention to influence nurses' perception and knowledge towards mobility in the long-term care (LTC) setting.

Methods

Search efforts were conducted using University of Massachusetts Online Library. Databases accessed were Cumulative Index to Nursing and Allied Health Literature (CINAHL) and PsycINFO. Search terms used for relevant literature included "education and nurse perspectives," "role of education in nurses' perspectives," "nurse competency on mobility," "nurse education on mobility," and "mobility in nursing homes." Additionally, "restorative nursing care" and "restorative nurse in long term care" were added to the search terminology at a later date to gather a more robust review.

A cumulative total of 654 results appeared (247 from PsycINFO and 407 from CINAHL). Articles were sorted by relevance. Relevance was determined inclusive if the material was published between 2013-2020, in English or translated to English, full text was available, intervention or main topic focused on nurses or patients. Nurses could be with any length of experience, the article either demonstrated or discussed that patient care could be affected and focused on older persons as the patient population which the nurse primarily cared for. The thought to increase search parameters to include 2013 was completed due to the issue of long-term care (LTC) mobility being underexamined. Exclusion of material occurred if mobility was a secondary topic, was an editorial, or was not peer reviewed. The abstracts of 42 articles and 61 articles were reviewed by this DNP student from PsycINFO and CINAHL respectively.

Results

As noted above, the long-term care (LTC) space regarding nurses' perception and knowledge on mobility was under explored. Further, mobility education for nurses as a quality improvement (QI) intervention in LTC facilities was not well understood. The DNP student had chosen to include articles that do not specifically utilize education as an intervention for increased perceived importance of mobility in LTC, as these were minimal. It was determined by the DNP student to expand the review of literature to discuss older persons in acute care and the community as well as the current state of mobility in LTC.

Ten articles were found to be relevant for this review of literature. Design types included five cross-sectional, two experimental, one exploratory descriptive, one quasi-experimental, and one systematic review. Setting locations were in nursing homes, hospitals, or the community. The majority of participants were nursing staff, although two articles assessed nursing home resident populations. According to the Johns Hopkins Level of Evidence, all were either deemed

Level II or III (Upstate Medical University, 2020). A complete summary of studies can be seen in Appendix C.

Findings

From the review of literature, three themes emerge in the context of the impacts of education on the perception of nurses on the mobility of residents of long-term care (LTC) facilities. The following themes were prevalence of mobility impairment in LTC facilities, limited knowledge of nurses on mobility support, and impacts of education on knowledge and perception.

Prevalence of Mobility Impairment in Long-Term Care Facilities

Three studies affirmed that mobility was a key issue that impacts the ability of the residents of LTC facilities to attain the required quality of life (Morais et al., 2017; Smith et al., 2015; Sverdrup et al., 2018). The high prevalence of mobility impairments makes it essential for LTC facilities to explore approaches that may assist in the improvement of the mobility of the residents. With compromised capacity to move, the residents may have challenges to accomplish aspects of daily living. The studies also identified the risk factors that may rationalize the prevalence of mobility impairment in the LTC facilities (Smith et al., 2015). Risk factors identified include advanced age, reduction in vision, gait, and balance due to the compromise physical balance and different health care issues that are associated with the advanced age (Smith et al., 2015). Advanced aged, as recognized in the review of literature, is associated with an array of chronic health complications that impact their capacity to exhibit normal mobility (Smith et al., 2015). It is imperative that an effective solution that will see the realization of nurses-supported mobility is accomplished.

Limited Knowledge of Nurses on Mobility Support

Another key theme was low levels of competency of nurses on the subject of mobility support to residents of LTC facilities. In four of the studies reviewed, many nurses exhibited limited knowledge on different aspects of the mobility of residents and patients (Borland et al., 2013; Dermody, 2016; Gattinger et al., 2016; Kuk et al., 2017). For nurses to adequately support the mobility among the residents in various LTC facilities, they must be competent in the different aspects of mobility and be capable of deciding on the appropriate mobility intervention. The low levels of competency are a major impediment to the capacity of the nurses to deliver the appropriate care to the resident population.

Impacts of Education on Knowledge and Perception

On three studies reviewed, the focus was to establish the correlation between the impacts of education of the nurses on their competency and perception towards the issue of mobility of the residents. Mary et al. (2018), Slater (2019), and Walker and Harrington (2013) designed investigations to assess the impacts of training of the nurses on mobility and mobility support. While noted that two studies focused on acute care and one looked at restorative programs specifically, the primary impacts of the training were improved levels of knowledge of the nurses. It was indicated that unless nurses attain a certain level of competence, they will not be able to support residents in mobility adequately (Mary et al., 2018; Slater 2019; Walker & Harrington, 2013). Closely linked to the improved knowledge of the nurses was their perception about the provision of mobility support (Mary et al., 2018; Slater 2019; Walker & Harrington, 2013). The improvement was the knowledge levels following the implementation of education programs. Adequate knowledge among the nurses on mobility influenced their ability to perceive value, leading to the making of the decision whether or not to assist in the residents' mobility. It

could be concluded that nurse training was an effective intervention leading to improvements in their perception of the need for mobility among the residents of LTC facilities.

Summary

The literature review presented the findings of investigations related to the mediating role of education in the improvement of knowledge and perception of nurses towards the mobility of residents in long-term care (LTC) facilities. Based on the finding that education improved the perception and knowledge of nurses on mobility, there was a need for LTC facilities to integrate measures that would ensure nurses have the necessary knowledge to support the mobility of residents. This was expected to contribute towards the improvement in the quality of life of residents in LTC facilities.

Evidence Based Practice: Verification of Chosen Option

Given the articles reviewed, all participants who completed an educational intervention had a positive correlation in knowledge and/or perception. Specifically, this was evident when looking at studies completed by Mary et al. (2018), Slater (2019), and Walker and Harrington (2013). Based on the review of literature completed, it was deduced that an in-person 30-minute educational intervention had the potential to be beneficial when wanting to positively impact nurses' perception and knowledge on the effects of immobility in the long-term care (LTC) setting.

Theoretical Framework

The theoretical framework chosen for this quality improvement (QI) project was Mezirow's Transformational Learning Theory (MTL) (see Appendix D). Mezirow defined transformational learning as, "the process by which we transform our taken-for-granted frames of reference (meaning perspectives, habits of mind, mind-sets) to make them more inclusive,

discriminating, open, emotionally capable of change and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action," (Mezirow, 2000, p. 67). This allowed for personal growth and a shift in one's thought, to a more advanced understanding of concepts. Training that occurred while a person was in their work environment, had been identified as a prime example of the MTL. It had been described as adults experiencing an "aha moment" where previous experiences have been put into context after additional education.

Mezirow's theory was an impactful guide for the QI Project as its focal point was an educational event surrounding the importance of mobility. The 30-minute presentation was MTL's hallmark transformational learning experience. Critical reflection took place during the post-education questionnaire and knowledge test (Maharaj, 2017). While mobilizing patients is not a novel notion, by using this theory, participants were able to connect their previous experiences with mobilizing patients to a deeper understanding of the importance of this task. It was hopeful that the educational intervention would create an "aha-moment" for participants by their perception of mobility becoming more favorable.

Goals, Objectives and Expected Outcomes

There were three Specific, Measurable, Assignable, Realistic and Time-specific (SMART) goals for this QI project. These are detailed in Table 1.

Table 1.

SMART Goals

Goal	Objective	Outcome
The DNP student educated LTC nurses on the topic of the importance of mobility	Eight separate 30-minute PowerPoint education events were to be	90% of nurses scheduled to work during these two days in December, were to

for their patients during the month of December 2020	completed by a total of 31 nurses during two days in December 2020.	attend one of the educational presentations
Analyze pre and post perception questionnaires within 30 days of education intervention completion	Using a paired t-test, assess changes in participant perception about the importance of mobility for their patients	Participants had a statistically significant improvement to their perception on the importance of mobility for their patients
Analyze pre and post knowledge tests within 30 days of education intervention completion	Using a McNemar's test assess change in participant knowledge about mobility	Participants had a statistically significant improvement to their knowledge about mobility

Methods

This Quality Improvement (QI) Project used an educational intervention. Nurse participants completed a pre and post questionnaire with five perception questions and five knowledge questions. A thirty-minute PowerPoint presentation was given to participants by the DNP student **(**Appendix E). The overarching goal of the presentation was to increase nurses' positive perception and knowledge of mobility for their patient population. Positive perception was defined as participants selecting either 'agree' or 'strongly agree' for all items and increased knowledge was defined as a 50% increase in knowledge scores.

Development of educational material was created by this DNP student. Current mobility best practices and evidence-based peer reviewed articles were found in the University of Massachusetts Amherst online library. Relevant information was then complied into a 22-slides of PowerPoint. Topics included the definition of mobility, immobility complications, resident challenges, nursing barriers to completing mobility, and best practices.

Two dates in December were chosen for the DNP student to visit the site and present the mobility PowerPoint presentation in person. A total of eight live presentations (four on each day) were completed. Two presentations were shown on both day shift and two presentations were shown on both night shifts. Nurses were asked by the Director of Nursing to attend one of the sessions starting two weeks prior to the education sessions. Advertisement posters with the Director's signature were placed on the walls in the employee restrooms and at the timeclock.

Project Site and Population

The community of interest for this quality improvement (QI) project were nurses who work with the long-term care (LTC) patient population. Specifically, looking at nurses from one LTC facility located in an urban area north of Boston. This LTC facility had approximately 80 licensed beds dispersed on two units. Patients were primarily 65 years old or older with various comorbidities. Patients needed some level of assistance to complete their activities of daily life (medication administration, feeding, ambulation, toileting etc.). Services comprised of LTC were rehabilitation therapies (physical, occupation and speech), dementia-focused programs, and social outings/activities. Strong resources included routine evaluation by their case manager, social worker, and healthcare provider. The nurse-to-patient ratio on day shift was 10:1. Shifts were twelve hours.

Stakeholders were the Director of Nursing, Medical Director, and Executive Administrator. The Director of Nursing was the main point of contact. She distributed information to the Executive Administrator and Medical Director as necessary. All stakeholders approved of this QI project and saw much value. Inclusion criteria for participants were must be a nurse (RN or LPN), any age, any gender, work full-time, part-time or per diem, and had greater than one-year experience as a nurse in any field. The Director of Nursing agreed to schedule

different staff members on Day 1 and Day 2, so DNP student could gather a greater participant population.

Implementation

There were two regularly scheduled nurses and one manager per unit on each shift. One extra nurse was working on each of the units during the two days of presentations (one per diem nurse per unit) for both shifts (day shift and night shift). The regularly scheduled nurses on each unit completed the pre-test, educational event, and post-test within a thirty-minute time frame. During this time, the two additionally staffed per diem nurses and both unit managers, oversaw the floors and tended to any urgent matters. When the regularly scheduled nurses returned to the floors, the per diem nurses and managers took part of the education event. This rotation took place once per shift for a total of 4 shifts. In addition to the per diem staff, salary nurse positions were asked to attend. These roles included Assistant Director of Nursing, Staff Development Coordinator, Minimum Data Set Nurse, and Wound Care. It was estimated a total of 32 nurses attended. A detailed schedule is in Table 2.

Table 2.

Voluntary Participants Schedule

	Day 1 Day Shift Participants	Day 1 Night Shift Participants	Day 2 Day Shift Participants	Day 2 Night Shift Participants
Unit A	Full Time-2 Per Diem-1 Manager-1	Full Time- 2 Per Diem-1 Manager -1	Full Time-2 Per Diem-1 Manager -NA (same manager as Day 1	Full Time-2 Per Diem-1 Manager- NA (same manager as Day 1)
Unit B	Full Time-2 Per Diem-1 Manager-1	Full Time- 2 Per Diem-1 Manager -1	Full Time-2 Per Diem-1	Full Time-2 Per Diem-1

		Manager -NA (same manager as Day 1	Manager- NA (same manager as Day 1)
Salary Nurses	5		
Total Sample Size	32 nurses		

Measurement Instruments

Nurses' perception and knowledge towards mobility were measured in this project. The DNP student had chosen not to include a program evaluation or collect demographics. This is due to the fact that the four small sessions of the educational event may have inhibited maintaining participant anonymity.

After researching established measurement tools, there were none that measure nurses' perception and knowledge towards mobility. The two most common tools regarding mobility were the Banner Mobility Assessment Tool (BMAT) (Boynton et al., 2014) and Physical Mobility Scale (PMS) (Pike & Landers, 2010) which evaluate the functional ability of a patient. As there was no appropriate tool to measure nurses' perception and knowledge, the DNP student developed the following two questionnaires based off of current literature: 5-item perception questionnaire and a 5-item knowledge test. The 5 items on perception used a 5-point Likert scale. Answers ranged from strongly disagree (1 point) to strongly agree (5 point) The higher the score means, the more positive perception the nurse has towards that one aspect of mobility (Appendix F).

Likert scales are a type of psychometric assessment tool (Joshi et al., 2015). Its goal is to translate qualitative feelings, attitudes or perceptions into quantitative data. Participants are asked to show their level of agreement (from strongly disagree to strongly agree) with the given statement (items) on a metric scale. Validity of any Likert scale is driven by the applicability of the topic concerned (Joshi et al., 2015).

Additionally, a pre and post knowledge test was administered to the participants. Contents of the test were created by the DNP Student. The DNP student had chosen to extract questions specifically from the content on the PowerPoint education. The 5-question knowledge test had true (0 points) or false (1 point) response options. Each item was scored as 1 point with the highest possible score being 5. The higher the score indicated better knowledge the nurse had on the importance of mobility (Appendix F)

Quality Improvement Procedure

Plan

Communication was started between this DNP student and the Director of Nursing at project site. A request was made to educate staff about the importance of mobility in the long-term care (LTC) setting. Planning for the quality improvement (QI) initiative started taking place three months prior to the intervention. The stakeholder meetings were held monthly starting in October. The DNP student reviewed the times of days that the presentation will be completed for staff. The DNP student managed several aspects of the project: who will cover the resident care activities while staff were in the presentation, the number of expected voluntary participants, advertisement to participants, how the findings will be relayed to facility, creation of the pre/post perception and knowledge test and the presentation's contents. The DNP student coordinated with the receptionist to reserve a private room for education that was presented in December

2020. The primary outcome of this QI project was to promote positive perception and increase their knowledge on the need for mobilizing their patients.

Do

Nurses completed a survey on perception and knowledge test before the education and the same survey and test after the educational intervention. Data collected was synthesized by DNP student using Statistical Packages for the Social Sciences (Cleophas & Zwinderman, 2010).

Check

All pre and post questionnaires were analyzed within 30 days of completion. The primary goals were to have an increase in positive perception and knowledge of mobility. There would be an increased selection from 'strongly disagree, disagree or neutral' to 'agree or strongly agree' on all perception questions and a 50% increase in knowledge scores.

Act

A presentation of findings was shown to stakeholders in February 2021. This was very well received by all.

Data Analysis

Data was analyzed by the DNP student using Statistical Packages for the Social Sciences (SPSS) version 26 (Cleophas & Zwinderman, 2010). All study data were summarized with descriptive statistics. Likert scale variables were summarized with means, standard deviations, medians, and ranges. The change from pre to post was calculated for each item, Questions 1 through 5. The changes were approximately normally distributed, so paired t-tests were used to test the null hypothesis of no change over time for each of the five questions. The purpose of the

paired t-test is to determine whether there is statistical evidence that the mean difference between paired observations on a particular outcome is significantly different from zero. The t-test is a parametric test (Kent State University, 2020)

The true/false variables were summarized with counts and percentages for the correct responses. These five knowledge questions were compared pre vs. post using non-parametric McNemar's test. McNemar's test was chosen as the responses within each pair are binary. McNemar's test is based on a conditional statistic which is binomial, so it is straightforward to get exact *P*-values and compatible exact confidence intervals (Fay & Lumbard, 2020). All testing using a two-tailed alpha-level of 0.05. Results with a p-value less than or equal to 0.05 were considered statistically significant.

Cost-Benefit Analysis/Budget

Several costs were incurred with this quality improvement (QI) project. The main cost was having additional staffing during the days and nights of the educational event. A total of four per diem nurse shifts were included in the budget. The facility agreed bear this cost (see Appendix J).

An additional cost was time of the stakeholders. The Director of Nursing was major stakeholder and point of contact. She needed to set aside approximately three hours per month for three consecutive months, for our meetings. Additional stakeholders that had the option of attending the monthly meeting were the Medical Director, Unit Managers, Physical Therapy Director, and Executive Administrator.

The benefits to the nursing department having an increased positive perception of mobility have the potential to be monumental. If nurses believed that mobility is a priority for their patients, they would make time for ambulation. Increased ambulation for patients has the

potential to increase patient/family satisfaction and reduce immobilization health complications. Average costs of pressure injury's or falls significantly vary depending on severity of each. According to AHRQ (2014), the average monetary cost of a fall without injury is $6,694. The lowest cost of a Stage I pressure injury is $2,000 (AHRQ, 2014). If one were to utilize these figures, the cost of preventing one fall and one pressure injury per year at this facility would be $8,694 cost reduction. The project costs were $1,120 for additional staffing, while the return on investment for this QI project was $7,574.

Ethical Considerations/Protection of Human Subjects

The University of Massachusetts (UMass) Amherst Institutional Review Board (IRB) approval was obtained prior to initiating the DNP Project (Appendix G). Health Insurance Portability and Accountability Act of 1996 (HIPAA) and *Standards of Care* were carefully reviewed. No participant identifying or demographic data was collected. All participants read a consent form. Participant completion of the pre-intervention survey/knowledge test gave consent for participation (see Appendix H**).** No major risks/benefits or ethical considerations needed to be addressed. Since this project was reviewing all participants as one cohort, no coding of names was required. All data collected was kept in locked filing cabinet in the DNP student's private personal office.

It was noted by the DNP student that the project site cared for older persons who were considered vulnerable. The DNP student was not on the resident units and was not requesting any resident data (neither identifying nor demographic). DNP student asked staff to not discuss resident care information.

Timeline

It took six months to complete this quality improvement (QI) project in its entirety (see Appendix I). While proposal approval was occurring in September 2020, the DNP student began coordinating with stakeholders at the site. The first stakeholders meeting was held in early September. Two additional stakeholders meeting were in early October then November to discuss logistics, questions, or concerns. Education intervention was completed over a two-day time period during the second week of December. Data analysis began immediately following the completion of education and surveys. Data analysis took one month. Lastly, a presentation of findings to the stakeholders was held in February 2021. Presentation included a timeline of events, number of participants, results from pre/post questionnaire analysis and recommendations to improve practice.

Results

This quality improvement (QI) project took place at one 80 licensed bed long-term care (LTC) facility located in an urban area north of Boston. Participants were 32 nurses (staff nurses and managers). Thirty-one participants were included in the analysis as they completed both pre and post portions. The eight educational intervention sessions were completed on December 17 and 18, 2020. Four sessions were presented each day. Each session had between 2-5 participants.

Pre-Test vs. Post-Test – Q1 through Q5 and Overall Perception Results

Questions 1 through 5 related to the nurses' perception of mobility for their patients. In all questions including overall results, participants perception positively increased.

Table 3.

Pre Test vs. Post Test – Q1 through Q5 and Overall Perception Results(n=31)

	Pre test				Post test				*p*-value
	Mean (SD)	Median	Min	Max	Mean (SD)	Median	Min	Max	

Q1	4.0 (0.8)	4.0	3.0	5.0	4.6 (0.6)	5.0	3.0	5.0	<0.001
Q2	3.8 (1.0)	4.0	2.0	5.0	4.6 (0.6)	5.0	3.0	5.0	<0.001
Q3	3.8 (1.0)	4.0	2.0	5.0	4.6 (0.6)	5.0	3.0	5.0	<0.001
Q4	4.0 (0.8)	4.0	3.0	5.0	4.7 (0.5)	5.0	4.0	5.0	<0.001
Q5	4.0 (0.8)	4.0	3.0	5.0	4.7 (0.5)	5.0	4..0	5.0	<0.001
Total	19.6 (3.2)	19.5	15.0	25	23.2 (2.1)	24	18.0	25.0	<0.001

On a Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree), there was a statistically significant increase in survey responses from pre to post for all five questions. Question 1 went from a mean ± standard deviation of 4.0±0.8 pre to post of 4.6±0.6, with a change from pre to post of 0.6±0.9 ($p<0.001$). Question 2 went from a mean ± standard deviation of 3.8±1.0 pre to post of 4.6±0.6, with a change from pre to post of 0.7 ± 1.0 ($p<0.001$). Question 3 went from a mean ± standard deviation of 3.8±1.0 pre to post of 4.6±0.6, with a change from pre to post of 0.8±1.1 ($p<0.001$). Question 4 went from a mean ± standard deviation of 4.0±0.8 pre to post of 4.7±0.5, with a change from pre to post of 0.6±0.8 ($p<0.001$). Question 5 went from a mean ± standard deviation of 4.0±0.8 pre to post of 4.7±0.5, with a change from pre to post of 0.7±0.8 ($p<0.001$). Overall results went from a mean ± standard deviation of 19.6±3.2 pre to post of 23.2±2.1, with a change from pre to post of 3.5±3.2 ($p<0.001$).

Pre Test vs. Post Test – Q6 through Q10 and Overall Knowledge Results

Questions 6 through 10 were the knowledge base portion. In all five questions and, participants had at least a 50% improvement of their knowledge scores pertaining to mobility after the educational intervention.

Table 4.

Pre Test vs. Post Test – Q6 through Q10 Knowledge Results

	Pre test		Post test		
	n	%	N	%	*p*-value
Q6	20	62.50	29	93.55	0.008
Q7	17	53.13	28	90.32	0.001
Q8	15	46.88	28	90.32	<0.001
Q9	17	53.13	29	93.55	<0.001
Q10	19	59.38	30	96.77	0.001

Table 5.

Pre Test vs. Post Test –Overall Knowledge Results

	Pre test				Post test				
	Mean (SD)	Median	Min	Max	Mean (SD)	Median	Min	Max	*p*-value
Total	2.8 (1.0)	3.0	0.0	5	4.6 (0.8)	5.0	1.0	5	<0.001

Questions 6 through 10 were analyzed on the percentage of correct responses from pre to post. There was a statistically significant increase in the percentage of correct responses from pre to post on all 5 questions. On Question 6, the survey responders went from 62.50% correct pre to 93.55% correct post (p=0.008). On Question 7, the survey responders went from 53.13% correct pre to 90.32% correct post (p=0.001). On Question 8, the survey responders went from 46.88% correct pre to 90.32% correct post (p<0.001). On Question 9, the survey responders went from 53.13% correct pre to 93.55% correct post (p<0.001). On Question 10, the survey responders went from 59.38% correct pre to 96.77% correct post (p=0.001). For the overall knowledge, there was a statistically significant mean increase in the number correct of 1.9±1.3 (p <0.001).

Discussion

As evidenced above, a PowerPoint educational intervention positively impacted both participants perception and knowledge towards mobility for their patients. The mean for perception pre intervention was 19.6 compared to post intervention of 23.2. The most significant change was noted in Question 3 with a change mean of 0.8. Participants originally did not perceive long-term side effects of immobility as a consequence of decreased mobilization. When looking at the average knowledge test scores, pre- intervention was 55% compared to post intervention of 93%. The most impressive change can be seen in in Question 8. Meaning most participants incorrectly initially believe that patients were at higher risk for falling when mobilizing. During the post intervention, participants scored the highest in Question 10. Nurses now understood that not mobilizing patients could be considered missed care by omission.

Findings from this quality improvement (QI) project were consistent with the review of literature. Specifically, the two themes of nurses' limited knowledge of mobility and the impact of mobility education on nurses' knowledge and perception. Four articles emphasized nurses limited knowledge on different aspects of mobility (Borland et al., 2013; Dermody, 2016; Gattinger et al., 2016; Kuk et al., 2017). Nurses may have inadequate familiarity about assessing the need for mobility (Dermody, 2016). The pre-test revealed reliance on physical therapy for assessment as many perceived only physical therapist could mobilize patients. Nurses also identified lack of education about mobility as a top barrier for mobilization (Kuk et al., 2017). This aligns with all knowledge questions having a pre-test score of under 64%.

Educational interventions, such as this QI project, have been influential in impacting nurses' knowledge and perception. A brief training session (2 hours or less) can cause significant change in the learner's knowledge of facts, attitudes, and planned practices (Walker &

Harrington, 2013). When a similar educational intervention was completed, post-survey scores increased by 16.8% (Mary et al., 2018). The post knowledge scores were at least 90% for all participants. Although the mean perception shifted from neutral to agree, perception could take longer to adjust as the nurse integrates their future experience into their decided upon long-term perception.

It is reiterated that the current literature surrounding mobility was lacking in the LTC space. As noted previously, the review of literature needed to include different care areas as LTC nurses' perception and knowledge regarding mobility is under-researched. Additionally, little was known about the current state of trialing an educational intervention to increase perception and knowledge of LTC nurses.

The educational intervention did spark verbal dialogue among participants about their past experiences with mobility. In alignment with the MLT theory, nurses had the described "ah-ha" moment of the importance of mobility during the intervention, while simultaneously pulling from their past experiences of mobilizing patients. During the sessions, participants completed phases 1-7 of MLT's theory by starting with reflection of a disorienting dilemma (a time when he mobilized a patient) to acquisition of knowledge (PowerPoint being taught). The remaining three phases will be tied into their future practice.

Setting Facilitators and Barriers

Facilitators of this project were the stakeholders. The Director of Nursing, Medical Director, and Executive Director all stressed the importance of this education to their staff. Had there not been leadership assisting in driving the project, it is unclear whether the participants would be been so keen to learn this information. Resources needed for this project included a computer with a projector, a private room to show the presentation, and allowing the nurses 30-

minute blocks to complete this task. The computer was brought in by the DNP lead, while the facility provided a private room and projector. The manager and per diem staff on each unit covered resident care activities while the primary nurses are off the unit. Barriers to obtaining a large participant panel were low staffing. The facility has baseline moderate staffing levels. Due to the Pandemic, multiple staff members were out of work recovering from coronavirus. Fortunately, due to the stakeholders' investment in this project, we were able to overcome this barrier by having additional staffing needs met.

Limitations

There were several limitations to this quality improvement (QI) project. First, only nurses at the facility who were available on the designated education days were able to participate. Secondly, the same questionnaire was given for pre and post intervention. This has the potential for testing bias as the participants have prior knowledge of the survey. Future recommendations for a DNP student or clinical staff wanting to repeat the project include offering recorded educational sessions for increased participation for those nurses who can participate on different scheduled workdays and having the post education questionnaire have similar but different items. When using these findings in LTC facilities, it is recommended stakeholders quarterly review clinical metrics that patient mobility can improve (better patient quality of life, pressure injury reduction and fall reduction). Lastly, associates and bachelors nursing curriculums should include more robust teaching about the importance of mobility for patients.

Conclusion

Decreased mobility for long-term care (LTC) residents can have lasting negative health implications. The importance of mobility in LTC needs to be better understood by nurses. This quality improvement (QI) project has demonstrated that a thirty-minute PowerPoint educational

intervention can foster positive impact for both nurses' perception and knowledge towards mobility. Future steps to sustain results should include annual mandatory competencies on mobility. There are several actions that may be needed to advance implementing evidence-based care at this LTC: leadership fostering a culture that encourages mobility for residents; development of a multidisciplinary mobility council; creating of a strong mobility policy for staff to reference; and staff to be held accountable for assisting residents in achieving their daily maximum mobility potential. The plan for action includes quarterly check-ins with stakeholders at the project site to offer assistance in developing a mobility protocol. A poster presentation of findings will be displayed at the project site.

References

American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

Agency for Healthcare Research and Quality. (2014, October). *Are we ready for this change?* https://www.ahrq.gov/patientsafety/settings/hospital/resource/pressureulcer/tool/pu1.html

Borland, A., Martin, C. H., & Locke, J. (2013). Nurses' understandings of suitable footwear for older people. *International Journal of Health Care Quality Assurance, 26*(7), 653–665. https://doi.org/10.1108/IJHCQA-05-2012-0050

Boynton, T., Kelly, L., & Perez, A. (2014). Implementing a mobility assessment tool for nurses. *American Nurse Today,* 19, 13-16.

Brown, C., Redden, D., Flood, K., & Allman, R. (2009). The underrecognized epidemic of low mobility during hospitalization of older adults. *Journal of the American Geriatrics Society*, 57, 1660–1665. https://doi-org.silk.library.umass.edu/10.1111/j.1532-5415.2009.02393.x

Boltz, M., Resnick, B., Capezuti, E., Shuluk, J., & Secic, M. (2012). Functional decline in hospitalized older adults: Can nursing make a difference? *Geriatric Nursing*, 33(4), 272–279. https://doi-org.silk.library.umass.edu/10.1016/j.gerinurse.2

Callen, B. L, Mahoney, J. E., Wells, T. J, Enloe, M., & Hughes, S. (2004). Admission and discharge mobility of frail hospitalized older adults. *MEDSURG Nursing*, 13, 156–163.

Communication and Optimal Resolution (CANDOR). (2016, April). Retrieved February 17, 2020, from https://www.ahrq.gov/patient-safety/capacity/candor/index.html

Constantin, S., & Dahlke, S. (2018). How nurses restore and maintain mobility in hospitalised older people: An integrative literature review. *International Journal of Older People Nursing,* 13(3). doi:10.1111/opn.12200

Cleophas, T. J., & Zwinderman, A. H. (2010). SPSS for Starters. [electronic resource] : SPSS for Starters. Springer Netherlands.

Dermody, G. (2016). Barriers to Nurses' Promoting Mobility in Hospitalized Older Adults. *Theses and Dissertations. 1*

Doherty-King, B., Yoon, J. Y., Pecanac, K., Brown, R., & Mahoney, J. (2014), Frequency and duration of nursing care related to older patient mobility. *Journal of Nursing Scholarship,* 46: 20-27. doi:10.1111/jnu.12047

Dirkes, S. M., & Kozlowski, C. (2019). Early mobility in the intensive care unit: Evidence, barriers, and future directions. *Critical Care Nurse,* 39(3), 33–42. doi: 10.4037/ccn2019654

Evripidou, M., Merkouris, A., Charalambous, A., & Papastavrou, E. (2019). Implementation of a training program to increase knowledge, improve attitudes and reduce nursing care omissions towards patients with dementia in hospital settings: A mixed-method study protocol. *BMJ Open,* 9(7). doi:10.1136/bmjopen-2019-030459

Fay, M. P., & Lumbard, K. (2020). Confidence intervals for difference in proportions for matched PAIRS compatible with Exact MCNEMAR'S or sign tests. Statistics in Medicine, 40(5), 1147–1159. https://doi.org/10.1002/sim.8829

Gattinger, H., Leino-Kilpi, H., Hantikainen, V., Köpke, S., Ott, S., & Senn, B. (2016). Assessing nursing staff's competences in mobility support in nursing-home care: development and

psychometric testing of the Kinesthetics Competence (KC) observation instrument. *BMC Nursing, 15(1).* doi:10.1186/s12912-016-0185-z

Illinois Council on Long Term Care. (n.d.). *Strategies for improving resident mobility.* http://www.nursinghome.org/.

Joshi, A., Kale, S., Chandel, S., & Pal, D. (2015). Likert Scale: Explored and Explained. *British Journal of Applied Science & Technology*, *7*(4), 396–403. doi: 10.9734/bjast/2015/14975

Kabiri, M., Brauer, M., Shafrin, J., Sullivan, J., Gill, T. M., & Goldman, D. P. (2018). Long-term health and economic value of improved mobility among older adults in the United States. *Value in Health*, *21*(7), 792-798.

Kanaskie, M. L., & Snyder, C. (2018). Nurses and nursing assistants decision-making regarding use of safe patient handling and mobility technology: A qualitative study. *Applied Nursing Research*, *39*, 141-147.

Kent State University. (2020, September 3). *SPSS Tutorials: Paired Samples t Test*. https://libguides.library.kent.edu/SPSS/PairedSamplestTest.

Kosse, N. M., Dutmer, A. L., Dasenbrock, L., Bauer, J. M., & Lamoth, C. J. (2013). Effectiveness and feasibility of early physical rehabilitation programs for geriatric hospitalized patients: a systematic review. BMC Geriatrics, 13(1). https://doi.org/10.1186/1471-2318-13-107

Kuk, N. O., Zijlstra, G. A., Bours, G. J., Hamers, J. P., Tan, F. E., & Kempen, G. I. (2017). Promoting Functional Activity Among Nursing Home Residents: A Cross-Sectional Study on Barriers Experienced by Nursing Staff. *Journal of Aging and Health*, 30(4), 605-623. doi:10.1177/0898264316687407

Maharaj, T. (2017). Live-Model Simulation: Improving Nursing Students Attitudes and Knowledge of Alzheimer's Disease. *Clinical Simulation in Nursing, 13*(9), 446–451. doi: 10.1016/j.ecns.2017.05.002

Mary, Z., Afzal, M., Sehar, S., & Gilani, S. A. (2018) Improving Nurses Knowledge and Attitude regarding Early Mobilization of Post-Operative Patients. *Journal of Health, Medicine and Nursing*

Mezirow, J. (2000) Dimensions of adult learning. San Francisco, CA: Jossey-Bass.

Morais, P. C. A., Mauricio, T. F., Moreira, R. P., Guedes, N. G., Rouberte, E. S. C., Ferreira, J. D. F., & Lima, P. A. D. (2017). Nursing diagnosis of Impaired Physical Mobility in elderly people at primary health care. *International Medical Society.* 10.3823/2305

Pike, E., & Landers, M. (2010). Responsiveness of the physical mobility scale in long-term care facility residents. *Journal of Geriatric Physical Therapy*, 33, 92-98.

Poghosyan, L., Norful, A. A., Fleck, E., Bruzzese, J., Talsma, A., & Nannini, A. (2017). Primary Care Providers' Perspectives on Errors of Omission. *The Journal of the American Board of Family Medicine, 30*(6), 733-742. doi:10.3122/jabfm.2017.06.170161

Powell, B., Tazamal, M., Buhr, G., & Powell, B. (2016). Increasing Mobility in the Nursing Home Through Implementation of a Restorative Program. *Journal of the American Medical Directors Association, 17*(3). doi: 10.1016/j.jamda.2015.12.058

Slater, T. (2019). Reducing Falls Through an Education Intervention to Increase Nurse-Promoted Mobility in Hospitalized Patients.

Slaughter, S. E., Estabrooks, C. A., Jones, C. A., & Wagg, A. S. (2013). Mobility of Vulnerable Elders (MOVE): study protocol to evaluate the implementation and outcomes of a

mobility intervention in long-term care facilities. *BMC Geriatrics, 11*(1). doi: 10.1186/1471-2318-11-84

Smith, A. R., Chen, C., Clarke, P., & Gallagher, N. A. (2015). Trajectories of Outdoor Mobility in Vulnerable Community-Dwelling Elderly. *Journal of Aging and Health, 28(5), 796–811.* doi:10.1177/0898264315611665

Stall N. (2012). Tackling immobility in hospitalized seniors. *CMAJ: Canadian Medical Association journal,* 184(15), 1666–1667. doi:10.1503/cmaj.109-4281

Sverdrup, K., Bergh, S., Selbæk, G., Røen, I., Kirkevold, Ø., & Tangen, G. G. (2018). Mobility and cognition at admission to the nursing home - a cross-sectional study. BMC geriatrics, 18(1), 30. https://doi.org/10.1186/s12877-018-0724-4

Turan, E., Yanardag, M., & Aras, O. (2012). Functional independence, quality of life, and level of mobility of elderly people living at home and nursing home. Topics in Geriatric Rehabilitation, 28(3), 201– 207. https://doi-org.silk.library.umass.edu/10.1097/TGR.0b013e31825eb924

Upstate Medical University. (2020, April 17). *Johns Hopkins Nursing Evidence-Based Practice: Home*. https://guides.upstate.edu/c.php?g=1023176.

Walker, B. L., & Harrington, S. S. (2013). Results of a field test and follow-up study of a restorative care training program. *Nurse Education Today,* 33(9), 1034-1039. doi:10.1016/j.nedt.2012.05.007

Appendix A

CANDOR

Documents for Submission to Reviewers	**Is the document available?**
Policies and procedures a. Reporting of incidents, occurrences, or complaints b. Complaint/grievance management c. Disruptive behavior and/or code of conduct d. Investigation of occurrences (i.e., sentinel events or other triggers for RCA) e. Other peer review policies f. Informed consent or shared decision making g. Disclosure h. Care for the caregiver, employee assistance, physician wellness i. Ethics consult triggers	 ___ ___ ___ ___ ___ ___ ___ ___ ___
Bylaws for medical staff and/or hospital a. Peer review process b. Oversight/management of adverse or "harm" events	 ___ ___
Organizational safety and/or quality plan a. FMEAs or other proactive process b. RCA policies/procedures/processes	 ___ ___
Organizational Structure a. Organizational chart showing connections among safety, risk, quality, credentialing, ethics, legal, and claims	 ___
b. Patient and family advisory council: membership and bylaws	___

Safety survey or other quality survey, such as patient satisfaction results a. Safety attitudes questionnaire c. AHRQ Hospital Survey on Patient Safety Culture d. Hospital patient satisfaction survey e. Employee engagement surveys	___ ___ ___ ___
Board minutes or reports related to quality and safety a. Reports related to demographic and descriptive data of vulnerable populations b. Quality and safety outcomes based on race, ethnicity, and language	___ ___

Appendix B

Gap Analysis Data

What was discovered?	No formal nurse driven ambulation policy Outdated mobility orders for patients Lack of interdisciplinary communication regarding a patients ambulation status Concern for patients having increased pain Inconsistent nursing documentation regarding mobility
What major themes occurred?	No accountability for nursing to ambulate patients Lack of knowledge by nurses regarding the importance of ambulation Nurses are concerned about time management when including additional tasks to their resident care routine
What insights were gained?	Nurses are willing to be educated Nurses are fearful of their patients falling Nurses want to better the quality of life for their patients

Appendix C

Summary of Studies

Author /Year	Study purpose	Study design/sample	Key findings	Johns Hopkins Evidence Level
Borland et al./ 2013	Gain insight into nurses' understandings of what constitutes as suitable footwear for older people in care homes.	Exploratory descriptive qualitative survey. Participants were 20 registered nurses throughout six Scottish nursing homes. Data was collected using a questionnaire that included five open-ended questions. Content analysis was used to theme footwear perceptions.	Nurses provided erroneous responses on what constitutes suitable footwear, especially in the context of fall prevention. Without the prerequisite knowledge, the nurses are not able to ascertain whether the residents have appropriate footwear for mobility and prevention of falls. 85% of residents' footwear is purchased by family members.	Level III
Dermody/ 2016	To examine the association between nurses' knowledge, attitude and external barriers and the nurse's mobility-promoting behavior. Nurse perception of the priority organizations place on mobility was also evaluated.	Cross-sectional, descriptive, correlational study with convenience sampling. Participants were 85 nurses caring for 98 inpatients 65 and older.	Nurse attitudes and external barriers, rather than only knowledge, may contribute to insufficient mobility promotion by nurses for hospitalized older adults. Novice nurses had lower priority to promote mobility compared to more seasoned nurses.	Level III
Kuk et al./2017	Gain insight on the prevalence of nursing experienced barriers regarding the promotion of functional activity	Cross-sectional study. Barriers experienced by 368 nurses from 41	The barrier associated most closely with promotion of functional activity	Level III

	among nursing home residents, and the association between these barriers and nursing staff-perceived promotion of functional activity.	nursing homes in the Netherlands.	was nurses' lack of education regarding the importance of mobility. Since nurses did not understand the importance of this need, they were less likely to initiate mobility measures.	
Gattinger et al./ 2016	Develop and test the Kinesthetics Competence (KC) observation instrument for assessing nursing staff's competences in kinesthetics.	Cross-sectional study in three nursing home throughout Germany. Nurses (n=48) were filmed during mobilization situations	For nurses at LTC facilities to offer mobility support, some level of competence is required for the nurses to be able to adequately assist patients. In the development of the KC observation instrument, knowledge is crucial for the nurses to offer support in a manner that does not compromise the comfort of the individuals in need of assistance. Kinesthetic is crucial in the improvement of the interaction of the nurses and the delivery of mobility support services. The developed tool revealed a variation in the levels of knowledge between nurses who receive the training and those who are yet to undergo the training.	Level III

			Nurses can only have the right perception if they are competent in different aspects mobility.	
Mary et al./2018	QI project to increase nurses' knowledge and attitude regarding mobilization of their post-operative patients.	Experimental study using a pre-survey, educational intervention, post survey design. There were 109 surgical nurses from one acute care hospital in Lahore, Pakistan.	There was a significant improvement in the knowledge and attitudes of mobility. This affirms a direct correlation between the two aspects. This study indicates that education has positive impacts on the knowledge levels, which in turn impacts the perception of nurses on mobility support.	Level III
Morais et al./ 2017	Understand the amount of patients in LTC facilities that have impaired mobility as a diagnosis.	Cross-sectional study of 50 LTC residents.	71% of the resident participants has impaired mobility as a diagnosis. Characteristics of impaired mobility were limited capacity to perform gross motor skills (89.7%), fine motor skills (56.4%), and engagement in substitution of movements (74.4%).	Level III
Slater/2019	Pre-test/post-test quality improvement project on whether educating registered nurses on the importance of nurse-promoted patient mobilization could increase RN knowledge on patient mobility and	Quasi-experimental study. Thirteen female registered nurses on a cardiology/neurology nursing unit in a southeastern area of the United States.	Mobility Knowledge Questionnaire accuracy scores improved significantly (p=.021) four weeks after the intervention. This increased knowledge	Level II

	reduce the rate of patient falls.		is associated with improvement in the perception of the nurses regarding the provision of mobility support.	
Smith et al./2015	Investigate the role of individual and community risk factors on trajectories of mobility in a population of vulnerable community-dwelling elderly.	Systematic review of 1,188 older adults in Detroit, MI who qualify for federally funded home care. A latent class growth analysis was used to model the frequency of going outside over a 15 month period.	Mobility of the elderly is affected by limitations in gait and balance, pain associated with different health complications, musculoskeletal deficits as well as vision. 32% reported never going out during a one week period, 38% go out once per week and 28% go outside 2-6 times per week. Barriers identified were fear of falling (56%), dependent upon a wheeled mobility device (37%), and physical barriers to enter/exit their homes (24%)	Level III
Sverdrup et al./ 2018	Describe mobility of a patient at time of admission to nursing homes. The purpose of this study was to see if there was correlation between patient dementia levels upon admission and their mobility level.	Cross-sectional study of 696 patient admissions to 47 nursing homes in Norway.	At time of admission, 43% failed the Short Physical Performance Battery balance test and 24% could not walk for 4 meters. Patients with severe dementia had significantly worse levels of mobility than residents with moderate dementia.	Level III

Walker & Harrington/ 2013	Improve restorative care knowledge, attitudes and practices of nursing home staff.	Experimental study using a pre-survey, educational intervention, post survey design. There were 203 direct care staff from several nursing homes across 8 states.	Participants had significant improvement in their knowledge as evidenced from the post-test scores. 60% reported making changes to their methods of care that now include an emphasis on encouraging and motivating patients to restore their functional ability. Efficacy of the educational intervention to impact patient care was apparent.	Level III

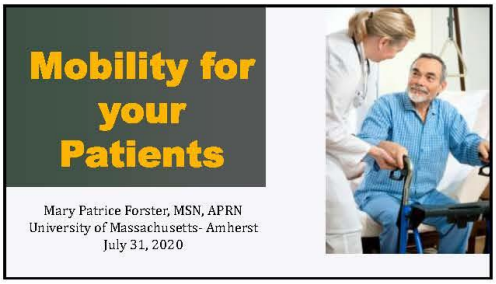
Appendix D

Mezirow's Transformational Learning Theory

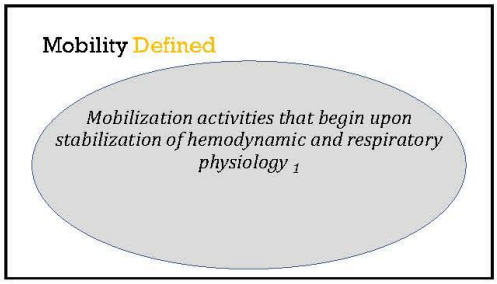
Appendix E

Educational Intervention PowerPoint

7/26/2020

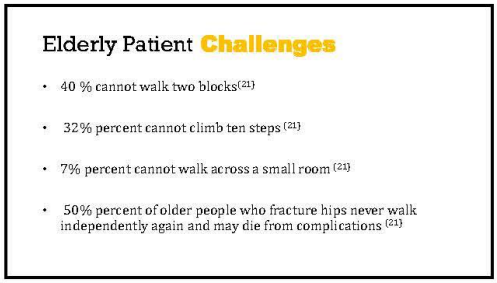


1



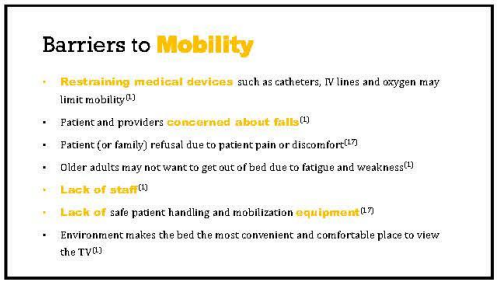
2

3



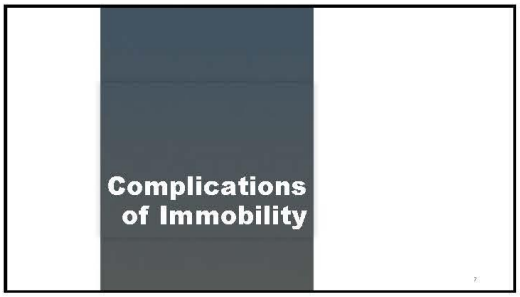
4

5



6

7/26/2020



7

Complications of Immobility

- Physiologically[10]
  - ✓ Decreased muscle strength and aerobic capacity
  - ✓ Blood clots
  - ✓ Increased bone loss
  - ✓ Vasomotor instability
- Clinically[10]
  - ✓ Deconditioning
  - ✓ Delirium
  - ✓ Aspiration events
  - ✓ Pressure injuries
  - ✓ Falls

8

Complications of Immobility

- After 1 week of bedrest, muscle strength **may decrease as much as 20%,** with an additional 20% loss each subsequent week[14]
- **Bedrest and inactivity** are contributing risk factors for neuromuscular weakness[14]
- Prolonged immobilization can heighten the risk for **facility-acquired complications** such as falls and pressure injuries[13]
- Facility-acquired pressure injuries can lead to further debilitation and lead to **increased healthcare costs**[13]

9

Patient Falls[6]

- Up to **12%** of hospitalized patients experience at least **1 fall during their hospital stay**
- Predictor of falls:
  - ✓ Ambulation assistance
  - ✓ Disorientation
  - ✓ Bowel control problems
  - ✓ Fall history
  - ✓ Inattention
  - ✓ Mobility
- Risk specific interventions such as ambulation and medication management are **not implemented consistently**

10

Patient Falls

- Higher staffing levels lead to fewer patient falls[6]
- Fall rates were less when standard nursing care was completed: [6]
  - ✓ No missed care (specifically ambulation)
  - ✓ Patient assessments every shift
  - ✓ Focused reassessment
  - ✓ Call light response
  - ✓ Toilet assistance
- With increased ambulation, there was no increase in patient falls[7]

11

12

7/26/2020

Facility Acquired Conditions (FACs)

Studies show that early and frequent ambulation makes patients less susceptible to FACs

- ✓Patients who ambulated saw a **37% decrease** in development of a paralytic ileus.[7]
- ✓Patients with acute deep vein thrombosis (DVT) who ambulated saw a significant reduction in pain and swelling after the second day, **7 days sooner** than a control group.[12]
- ✓Patients who **increased mobility duration and distance** had a hospital acquired pneumonia rate of **3.6%**, compared to a rate of **10%** in patients who did not ambulate.[16]
- ✓Pneumonia patients who mobilized left the hospital between **1 and 2.5 days earlier** than those who didn't.[9]

13

Clinical Recommendations

14

Everyday Mobility

- Ideal for all care environments[8]
- Strong focus on ambulation and out of bed mobility[8]
- Should constitute large portion of recovery process[8]
- Focus on caregiver safety and safe patient handling[8]

15

Everyday Mobility: Be a PRO

"By failing to prepare, you are preparing to fail." –Benjamin Franklin[11]

- ✓Patient Assessment
  - Is this patient's condition appropriate for the level of mobility I intend to implement?[8]
- ✓Resources
  - Do I have the material and human resources available to me that I need to mobilize this patient in a manner that is safe for me and for the patient?[11]
- ✓Organization
  - Have I done everything I can to organize equipment and create a safe environment for ambulation and mobility?[11]

16

Everyday Mobility: Procedure

1. **Turn**
   - Begin with in-bed mobility for patients who are not ready to advance toward ambulation due to acuity or strength[18]
2. **Sit**
   - Sitting or "dangling" at the bedside is a safe precursor to weight bearing activities[18]
3. **Stand**
   - Practicing weight bearing while remaining at the bedside allows for strength and balance building with patient and caregiver safety in mind[18]
4. **Stroll**
   - Safe ambulation with or without assistance should be done frequently for all patients who are able[18]

17

Safe Ambulation Tips[10]

- Ambulation should be **measured and tracked** for individual patients
- Assess ambulation status/progress on admission and throughout the patient's stay
- Use specific orders targeting ambulation, for example: physician directed instructions stating "**ambulate 3X a day**"
- **Target interventions** to those patient groups least likely to ambulate (ex: geriatrics), and who need assist devices or staff assistance when ambulating
- **Provide training** in safe ambulation **techniques and protocols for staff**
- Consider unit design: flooring and paint choices, guardrails, hallways free from clutter can help patients ambulate independently and safely

18

7/26/2020

Interventions for Success[7]

- **Be Consistent**
  - ✓ Consider writing a facility-specific procedure for everyday mobility of patients in all applicable care areas
- **Educate**
  - ✓ Create opportunities for education of staff that focus on awareness and importance of mobility and ambulation
- **Communication is key**
  - ✓ Make communication about patients' mobility status and activity a regular part of interdisciplinary communication
- **Document, Document, Document!**
  - ✓ Document within the EHR details of mobility including ambulation distances and patient tolerance

19

Questions?

Thank you!

20

References

[illegible]

21

References

[illegible]

22

Appendix F

Survey of Nurse Perception and Knowledge Test

Please complete by circling your answer

1. I believe mobility is important for my patients	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
2. I would prioritize mobility as an important part of my patients' ADL's	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
3. Immobility can have potential long term negative side effects	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
4. It is my responsibility to ambulate my patients	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
5. Patients should always achieve their highest level of mobility every day	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
6. Patients can only be mobilized by physical therapy	True	False			
	0	1			
7. Mobility is a nurse driven protocol	True	False			
	0	1			
8. Patients are at higher risk to fall when they are ambulating	True	False			
	0	1			
9. Sitting your patient upright can be part of the mobilization process	True	False			
	0	1			
10. Not mobilizing your patients could be considered missed care by commission	True	False			
	0	1			

Appendix G

Letter of Approval

UMassAmherst

Human Research Protection Office

Mass Venture Center
100 Venture Way, Suite 116
Hadley, MA 01035
Telephone: 413-545-3428

Memorandum – Not Human Subjects Research Determination

Date: September 23, 2020

To: Mary Patrice Forster, College of Nursing

Project Title: *Nurses' Knowledge and Perception of Resident Mobility in Long-Term Care Facilities*

HRPO Determination Number: 20-202

The Human Research Protection Office (HRPO) has evaluated the above named project and has made the following determination based on the information provided to our office:

☐ The proposed project does not involve research that obtains information about living individuals [45 CFR 46.102(f)].

☐ The proposed project does not involve intervention or interaction with individuals OR does not use identifiable private information [45 CFR 46.102(f)(1), (2)].

☒ The proposed project does not meet the definition of human subject research under federal regulations [45 CFR 46.102(d)].

Submission of an Application to UMass Amherst IRB is not required.

Note: This determination applies only to the activities described in the submission. If there are changes to the activities described in this submission, please submit a new determination form to the HRPO prior to initiating any changes. ***Researchers should NOT include contact information for the UMass Amherst IRB on any project materials.***

A project determined as "Not Human Subjects Research," must still be conducted ethically. The UMass Amherst HRPO strongly expects project personnel to:

- treat participants with respect at all times
- ensure project participation is voluntary and confidentiality is maintained (when applicable)
- minimize any risks associated with participation in the project
- conduct the project in compliance with all applicable federal, state, and local regulations as well as UMass Amherst Policies and procedures which may include obtaining approval of your activities from other institutions or entities.

Please do not hesitate to call us at 413-545-3428 or email humansubjects@ora.umass.edu if you have any questions.

Iris L. Jenkins

Iris L. Jenkins, Assistant Director
Human Research Protection Office

Appendix H

Quality Improvement Initiative Consent Form

You are being invited to participate in a quality improvement (QI) initiative titled Utilizing an Educational Intervention to Adjust Nurses Perception about the Importance of Mobility in Long-Term Care. This QI is being done by Mary Patrice Forster from the University of Massachusetts Amherst. You were selected to participate because you are a nurse at Royal Meadow View. The purpose of this QI is to better understand if an educational intervention regarding mobility of patients will help nurses achieve a more positive perception of the importance of mobility for their patients. If you agree to take part in this QI you will be asked to complete the survey/questionnaire on the next page both before and after the 30-minute educational intervention via PowerPoint. This survey/questionnaire will ask about how you view mobility for patients and it will take you approximately 1-2 minutes to complete. You may not directly benefit from this; however, we hope that your participation in the QI may allow us to better understand if an educational intervention can increase a nurses perception of mobility. To the best of our ability your answers in this study will remain confidential. We will minimize any risks to breach of confidentiality by keeping the consent forms in a locked box in my home office.

Your participation in this is completely voluntary and you can withdraw at any time. You are free to skip any question you choose.

If you have questions about this project you may contact the researcher(s), Mary Patrice Forster-781-258-8985. If you have any questions concerning your rights, you may contact the University of Massachusetts Amherst Human Research Protection Office (HRPO) at (413) 545-3428 or humansubjects@ora.umass.edu.

By proceeding to the survey/questionnaire on the next page you are indicating that you are at least 18 years old, have read and understood this consent form and agree to participate in this research study. Please keep this page for your records and return the survey/questionnaire to the researchers. Please DO NOT write your name on the survey/questionnaire.

Appendix I

Timeline

Task	September 2020	October 2020	November 2020	December 2021	January 2021	February 2021	March 2021
Recruitment of eligible participants	**X**	**X**					
Stakeholder Meetings	**X**	**X**	**X**				
Intervention; Evaluation; Toolkit				**X**			
Post-test and Analysis of outcomes				**X**	**X**		
Results presented to site						**X**	

Appendix J

Cost Analysis

- 3 Monthly Meetings with Stakeholders (60 minutes each): Salary employees- no additional cost
- 4 shifts covered by per diem nurses so staff nurses can go off unit during educational session- $35/hr. x 32 hours-$1,200
- Total Cost for facility **- $1,200**

Potential Return on Investment

- Average cost of one fall without injury-$6,694.
- The lowest cost of a Stage I pressure injury is $2,000
- Total cost of one fall + one Stage I pressure injury is $8,694
- ROI- $8,694 -$1,200= **$7,574**