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IMPLEMENTATION OF FRAILTY SCREENINGS IN THE PERIOPERATIVE SETTING

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Abstract

Background: Frailty is a general state of wellness in which physiologic reserve is reduced, making the patient more susceptible to homeostatic disturbances that can be brought on by exposure to anesthesia or surgery (Barnett, 2014). Deficits of neurological control, mechanical performance, and energy metabolism are hallmarks of the condition (Walston et al., 2018). Frail patients with reduced physiological and neurological reserve have a dramatically increased risk of postoperative delirium (Strøm et. al, 2016). In the perioperative setting, use of sedating medications like benzodiazepines are known exacerbates of postoperative delirium in frail patients (Nordt & Clark, 1997). Identification of frailty is key in preventing decreased cognition and physiologic function postoperatively (Susano et al., 2020). While it has been proven that frailty screenings can successfully identify at-risk individuals in the perioperative setting, widespread implementation remains unachieved (Walston et al., 2018). **Purpose:** The purpose of the DNP project is to analyze an implementation strategy of frailty screenings that effects practice and promotes longevity of frailty screening use. This was done by improving CRNA perception of frailty screening tools with an educational component to establish relevance of their use and provide access to a well-researched screening tool. **Methods:** A survey was completed before and after an educational presentation and distribution of a badge buddy with the FRAIL Scale on it. Results were analyzed in both Microsoft Excel and IBM SPSS. **Results:** There was not significant evidence to suggest that perceptions and practice were changed by the intervention. **Recommendations and Conclusion:** Staff recognized the importance of needing to use a more reliable method to assess patient frailty. Future studies seeking to implement frailty screenings with this design should seek to improve upon the limitations identified. **Key Words:** Frailty, post operative delirium, frailty screening, geriatric, implementation.

Background and Significance

With advances in healthcare in past decades, the age of the population has been steadily increasing (Strøm et. al, 2014). An aging geriatric patient population brings to light concerns of frailty. Frailty is a general state of wellness in which physiologic reserve is reduced, making the patient more susceptible to homeostatic disturbances, such as delirium, that can be brought on by exposure to anesthesia or surgery (Barnett, 2014). While frailty is not a term that is exclusively limited to use in defining the geriatric population, it is often used to describe the unexplained vulnerability observed in older adults by healthcare providers (Dhesi et. al, 2019) and is viewed as an essential component in guiding care in geriatric patients (Barnett, 2014). Deficits of neurological control, mechanical performance, and energy metabolism are hallmarks of the condition (Walston et al., 2018). While age can be a factor, low physical activity is the most powerful predictor of frailty (Apóstolo et. al, 2017). And frailty, more than chronological age, is associated with death and functional dependence after surgery (Strøm et. al, 2016).

Frail patients with reduced physiological and neurological reserve have a dramatically increased risk of postoperative delirium (Strøm et. al, 2016). In the perioperative setting, use of sedating medications like midazolam and other benzodiazepines are known causes of postoperative delirium (Nordt & Clark, 1997). In fact, frail patients receiving benzodiazepines are three times more likely than non-frail patients to develop delirium (Lee et. al, 2021). Early identification of frailty is key in preventing decreased cognition and physiologic function postoperatively (Susano et al., 2020). While it has been proven that frailty screenings can successfully identify at-risk individuals for adverse health outcomes in the perioperative setting, widespread use remains unachieved (Walston et al., 2018).

When paired with Enhanced Recovery after Surgery (ERAS) protocols that have been developed to address the risks of frailty during surgery, identification of frailty through screening tools has been proven to lower incidences of post-operative delirium (Strøm et. al, 2014). Identification and limitation of benzodiazepines has been shown to be more feasible in mitigating intraoperative risks of frailty than programs that currently exist to rehabilitate patients to optimize their health preoperatively (Barnett, 2014). Though the evidence is substantial that frailty screens improve identification of frailty in the perioperative setting, and can guide treatments towards improved postoperative outcomes, their use has not been made a standard of practice (Derwall & Coburn, 2021).

With abundant evidence demonstrating the usefulness of frailty screenings, there is still a lack of evidence on how to overcome barriers for widespread implementation (Walston et al., 2018). One of the major barriers has been identified as staff perceptions towards the screening tools (Callahan et. al, 2021). Staff perceptions are related to the issue of time: both time taken to be trained to the tool (Callahan et al., 2021) and time taken to utilize the tool (Susano et al., 2020). The issue of time was further exacerbated by lack of understanding of the significance of its importance (Taipale et al., 2012).

Currently, there is widespread institutionalized use of the American Society of Anesthesiologists (ASA) Physical Status Classification System, which provides a broad idea of the patients' comorbidities. Frailty Screenings, however, have been shown to be more effective in identifying frailty associated with those comorbidities (Gleason et. al, 2017). In a broader sense, it has been theorized that barriers to implementation are tied to access that staff has to a screening tool (Callahan et. al, 2021). Research should be aimed toward improving implementation strategies of frailty screenings in the perioperative setting (Dhesi et. al, 2019)

and one way could be addressing these barriers to access. This site of implementation for this project was chosen because of an observation of clinical need due to lack of existing screening use.

Purpose

The purpose of the DNP project is to analyze an implementation strategy of frailty screenings in a moderately sized perioperative area that promotes longevity of frailty screening use. This was done by improving staff perceptions of frailty screening tools with an educational component to establish relevance of their use and provided access to a well-researched screening tool.

Review of Current Evidence

A systematic review of the literature was performed through several medical databases including CINHAL and PubMed. The search terms of "frailty screen", "frailty", "postoperative delirium", and "implementation" were used. Seventeen relevant studies composed of quasi-experimental, qualitative, systematic review, and meta-analysis designs were found and included in the review. Studies were included if they discussed experimental designs addressing effectiveness of frailty screens, examined multiple tests, or discussed implementation in a clinical setting. Most all sources occurred within the last five years, and several older sources were used to support information in the more recent studies to establish long term relevance. Studies were excluded if they were not published in English or not published in a peer reviewed journal. After theme saturation was achieved and gaps in the literature were identified, several themes were identified in the literature that both supported the use of frailty screenings in the perioperative setting and presented barriers for a quality improvement undertaking. First, delirium is a risk of frailty: it is important to identify frailty in older adults to intervene early,

optimize patient health before surgery and to tailor care throughout the perioperative pathway (Shaji & McCabe, 2021). Second, frailty screening tools have been shown to reliably identify frailty and predict post-operative delirium (Derwall & Coburn, 2021). Third, the FRAIL Scale is the most widely used tool to identify at risk older adults (Gleason et. al, 2017). Lastly, there are specific barriers to implementation that make frailty screens difficult to feasibly establish in practice (Callahan et. al, 2021).

Delirium as a Risk of Frailty

Frailty is a general state in which physiologic reserve is reduced, making the patient more susceptible to homeostatic disturbances from exposure to anesthesia or surgery (Barnett, 2014). The mean prevalence of frailty of those 65 years and older in the United Sates is 10%, but it can range anywhere from 4-60% depending on the area and age of the resident population (Kojima et. al, 2019). Treating frail patients has been identified as a major challenge in the older adult population undergoing surgery (Apóstolo et al., 2017). It is a health condition that becomes difficult to navigate in the post-operative period when the patients undergo anesthesia for surgery (Archibald et al., 2021). Lack of early identification and intervention in the perioperative pathway can lead to post-operative delirium in frail patients (Shaji & McCabe, 2021) and decreased response to stressors makes these patients prone to poor surgical outcomes (Donoghue, 2019).

Exposure of frail patients to drugs given during anesthesia can create prolonged delirium during the recovery period in the post-anesthesia care unit (Barnett, 2014). This prolonged delirium can lead to increased length of hospital stay (Gleason et al., 2017), which in turn can create increased costs to both the patient and the hospital (Dhesi et. al, 2019). It contributes to increased risks for complications like delayed recovery (Owodunni et. al, 2021), decreased

ability to perform activities of daily living (ADLs), pathophysiological complications, and increased mortality (Susano et. al, 2020).

Various drugs given in the perioperative period, most notably midazolam, can exacerbate frailty (Nordt & Clark, 1997). A quasi-experimental observational cohort study by Lee et al. (2017) found that delirium was three times as likely after receiving benzodiazepines among frail patients compared to robust individuals. Other medications common in anesthesia that are prone to cause delirium in the elderly include anything with strong anticholinergic effects like diphenhydramine, meperidine, methocarbamol, zolipem, and cyclobenzaprine. (Adeola et. al, 2018). Anesthesia providers have an important role to play in assessment and prevention of post-operative delirium since benzodiazepine administration is common prior to and during surgery (Taipale et al., 2012). Identifying frailty and at-risk individuals is important for tailoring treatments accordingly (Callahan et al., 2021). Use of regional anesthesia techniques and careful titration of medications are but a few of the strategies that can be implemented by anesthesia providers to prevent delirium exacerbation in at-risk patients (Strøm et. al, 2016).

Frailty Screening Tools Predict Frailty

More so than empirical assessment data which can be subjectively skewed, frailty screens provide a better, more objective guide to identify frailty in a clinical setting (Walston et al., 2018). A meta-analysis of systematic reviews across 227,381 studies performed by Apóstolo et al. (2017) found that frailty screenings increased identification of frailty in both community settings, advanced care home settings, and inpatient and surgical hospital settings. A different systematic review done by Shaji and McCabe (2021) investigated the importance of early identification and determined that screenings can increase provider identification of frailty and increase implementation of preventative treatment strategies.

Several other quasi-experimental cohort studies like Gleason et. al (2017), Strøm et. al (2016), Susano et. al (2020), and Walston et. al (2018) support the idea that frailty screening tools successfully predict frailty. Callahan et al. (2021) used an electronic frailty index, adapted from the emergency department, that accurately predicted at- risk individuals undergoing nonemergent surgeries via information in their electronic health record. Researchers using the FRAIL scale in orthopedic surgical patients accurately predicted increased length of hospital stay, postoperative complications, and discharge to rehabilitation facilities (Gleason et al., 2017). In Susano et al.'s (2020) study on geriatric spinal patients, researchers found that frailty was usually under-identified, but their use of frailty screens successfully predicted poor cognition in the postoperative period.

The FRAIL Scale is a Widely Accepted Tool

While there are several screening tools that have proven to be reliable like the PRISMA7 and the Tilburg Frailty Screening tool, a more widely used tool found in the research was a variation of the Frailty Index: The FRAIL scale (Apóstolo et al., 2017). It was identified by Gleason et al. (2017) as a promising short scale to guide perioperative care and is advantageous in that it is not a time-consuming screening for the provider and retains its predictive value. It is a short patient- reported scale that measures five different aspects of frailty: fatigue, resistance, ambulation, illness, and loss of weight (Gleason et al., 2017). With three or more deficits present, the patient can be accurately identified as frail (Walston et al., 2018). Susano et al. (2020) found that the FRAIL scale was able to accurately predict patients who would experience post-operative delirium, more so than the American Society of Anesthesiologists (ASA) physical status classification system currently in widespread use.

Barriers to Widespread Implementation of Frailty Screening Tools

Despite the abundant evidence that supports the use of frailty screenings in the perioperative setting, widespread implementation has yet to be achieved (Walston et al., 2018). Staff perceptions towards the use of frailty screenings has been identified as a major barrier to implementation (Callahan et. al, 2021). These negative perceptions arise from a lack of time available to be trained to the tool (Callahan et al., 2021) and a lack of time to utilize the tool in the clinical setting (Susano et al., 2020). These feelings are further exacerbated by a deficit in clinician understanding as to the importance of frailty screening (Taipale et al., 2012).

One possible solution Callahan et al. (2021) researched was using an electronic tool that required no training because it was built into the electronic charting system. A computer program searched charts of patients scheduled to undergo surgery and flagged charts of those who had multiple risk factors (Callahan et. al, 2021). Other work solutions include using shorter screening tools that require little to no training such as the Animal Verbal Fluency exam, the mini-cognitive exam, and most notably the FRAIL scale (Susano et al.,2020).

Another proposed solution comes in a study on best practice implementation done by Lin et. al (2020), it was noted that nurses did not adhere to published standards of post-surgical wound care. An educational component was implemented with an “easy to follow” graphic tool, and staff were given access to a wound care template. Staff felt that access to the educational visual and the wound care template was effective in improving perceptions and solidifying change towards improved post-surgical wound care (Lin et. al, 2020). Additionally, collaborative interventions like renewed assessment protocols, staff education, and delirium awareness cards on staff identification badges has been shown to improve dementia diagnosis audit scores (Nadarajan et. al, 2014).

Gaps in the Literature

While many studies exist over a broad range of years that support frailty screenings as an objective way to identify frailty, there is a surprisingly rare occurrence in practice of screening use as it pertains to guiding perioperative clinical practice (Walston et. al, 2018). In the perioperative setting, staff time and resource limitations have been cited as barriers to implementation (Callahan et. al, 2021). This lack of implementation is likely due to provider confusion and lack of guidance on how to incorporate screenings, and indecision over which tool to use based on healthcare setting (Walston et. al, 2018). How to overcome these barriers for widespread frailty screening implementation were notably the largest gap in the reviewed literature.

In summation, frailty is a tenuous state of metabolic derangement that can be exacerbated in the perioperative setting by both surgical and anesthetic factors (Barnett et. al, 2014). Frail patients are at higher risk of developing post operative delirium which can increase length of hospitalization and delay recovery after surgery (Strøm et. al, 2016). Anesthesia providers can tailor their anesthetic to limit exposure to exacerbating agents to frail patients (Susano et. all, 2020). Frailty screenings have been shown to be reliable in identifying frailty and yet they have not been implemented in most perioperative settings (Apóstolo et al., 2017). A large barrier to this lack of implementation is provider perception (Callahan et. al, 2021). This DNP project sought to improve CRNA perceptions of frailty screening tools with an educational component to establish relevance of their use and provided access to a well-researched screening tool.

Theoretical Model

In 1981, authors Penchansky and Thomas theorized that the concept of access represents "the degree of fit between clients and the system." In layman's terms, access to a system directly

relates clients' ability or willingness to utilize a health service or system. They defined specific dimensions to access as availability, accessibility, accommodation, affordability, and acceptability. Availability refers to adequacy of supply of the system while accessibility concerns the location of the client to the location of the system. Accommodation can reference either the manner of system organization to the clients or the ability of the client to accommodate the system. Finally, affordability addresses the barrier of cost, and acceptability concerns a client's perception about the system (Penchansky & Thomas, 1981).

Regarding the topic of clinical registered nurse anesthetists (CRNA) use of frailty screenings in the clinical setting, this theory drives the project design by seeking to address the barrier of access identified. To summarize, a major barrier to implementation of frailty screenings has been tied to accessibility to a screening tool and knowledge of how to administer the screening, because lack of knowledge on how to use a tool can further confound the establishment of access (Callahan et. al, 2021). The efficacy of frailty screenings has been substantially proven throughout the literature, and yet their use in the perioperative setting to help guide medication administration remains elusive (Shaji & McCabe, 2021).

The access dimensions of availability, accessibility, accommodation, and affordability was addressed in the study by an intervention of a badge-buddy with a print-out of a well-researched frailty screening tool. Acceptability will be addressed by an educational presentation of importance of screenings as a standard of care. It is the hope that by addressing these five dimensions, practice will be positively influenced towards the use of frailty screenings in the perioperative setting where the intervention is administered.

Methods

Design

This was an exploratory quality improvement project that consisted of an interactive educational component paired with a quick reference guide in the form of a badge buddy for CRNAs. The defined hypothesis addressed the issue of access as the main barrier to widespread implementation of frailty screenings. In Penchansky and Thomas's Theory of Access one of the five dimensional barriers to access is acceptability, or in this case staff perceptions. A pretest and a post-test were used to assess change in staff perceptions and change in practice towards use of frailty screenings and to assess practice change after staff was given access to a frailty screening tool. Implementation was completed with a fellow student researcher who was studying the variables of knowledge and practice change.

Translational Framework

The evidence-based practice model that best fits this research project is the Iowa Model. The Iowa Model organizes the evidence-based research process into a flow chart that supports identification of a relevant problem, acquisition of sufficient evidence, appropriate design for a practice change, and integration of lasting change (Iowa Model Collaborative, 2017). Per the first step of the model, the relevant problem was identified: post-operative delirium is often exacerbated by frailty. Furthermore, the lack of use of frailty screenings when their reliability and sensitivity has been extensively proven is also and acknowledged issue. To acquire sufficient body of evidence, an exhaustive literature review was performed.

To address the aspect of the Iowa model that calls for an appropriate design for practice change, a study design was formulated based on an exhaustive research review to address major identified barriers to practice change- in this case perception of frailty screening use. The purpose of this research is to implement a strategy that increases acceptance and use of a tool that helps to identify frail individuals who are at increased risk for post-operative delirium. The

use of frailty screenings in the clinical setting has a substantial body of research behind it to support their usefulness in identifying frailty (Susano et. al, 2020). Since there is sufficient evidence to support the need and the practice change, the designed intervention of an easy-to-use frailty screening tool in the form of a badge buddy given to clinicians was implemented. In following the final steps of the Iowa Model, the hope was that the intervention would be sustainably integrated into practice and an increase in longevity of tool use would be improved due to improved clinician perception and access toward the tool. Then, the research was disseminated to assess whether the educational component paired with the badge buddy sufficiently improved perceptions of using the tool.

In summation, to affect practice change through the Iowa Model, the five dimensions of access previously laid out in Penchansky and Thomas's Theory of access was addressed. The hope was to integrate lasting change for a commonly identified issue into the practice of CRNAs by researching and designing a study that eliminated the barrier of access.

Setting

This project was conducted at a moderately sized community hospital in a metropolitan area in the southeast. This medical center is the smallest of three hospitals in a large, nationally recognized, academic hospital system. The facility is a 186-bed, Magnet Recognized hospital and provides a comprehensive array of services, including cancer care, cardiovascular care, neuroscience, and various surgical specialties. This site specializes in a variety of inpatient and outpatient surgical services, including mastectomies and breast reconstruction, neuro-spine surgery, orthopedics, ENT, and ophthalmologic procedures.

Sample

The population and sample for this project included all forty certified registered nurse

anesthetist providers at a moderately sized community hospital in a metropolitan area in the southeast. A convenience sample was taken of all providers able to attend an educational seminar presented during a staff meeting in an operating room at the site. The inclusion criteria for this project were all nurse anesthesia providers who could view education material in any format and receive a badge buddy. There were no exclusion criteria.

Staff were recruited via email communication through the CRNA who served as the student clinical coordinator at the site. Several emails were sent over the course of a week advertising the presentation scheduled for a staff meeting and requesting that the CRNAs fill out the pre-presentation survey, with a link to the survey. In person recruitment was also done by the student researcher while they were rotating through the site for a clinical rotation the month prior to the presentation. After the intervention, follow up emails were sent through the student coordinator with a link to the post intervention survey and requests that staff complete it. Refreshments were brought to the presentation to incentivize the CRNAs to participate.

Human Subjects Protection and IRB Approval. No identifying personal information was collected from participants. Attendance to the presentation, use of the badge buddies, and participation in the pre and post surveys was entirely voluntary. IRB approval was sought through the University of North Carolina at Greensboro. It was applied for and deemed exempt in December of 2022.

Intervention

The intervention was an educational presentation created through Microsoft PowerPoint paired with distribution of a badge buddy. The presentation was given by a pair of student researchers and laid out evidence for the importance of frailty screenings. Additionally, instruction on how to use the tool on the badge buddy was given. Education on a topic paired

with an easy to use and easily accessible graphic tool has been shown to increase perceptions and application of the knowledge taught (Lin et. al, 2020).

The badge buddy was printed with the FRAIL Scale, and the numeric score value and their meaning. The FRAIL Scale was chosen because it has been shown to be reliable (Apóstolo et al., 2017). It is a short and easy to use tool that would allow CRNAs to work it into their preoperative patient interviews (Gleason et. al, 2017). Enough badge buddies were made to distribute to the entire staff of CRNAs should they decide to use the tool after reviewing the educational presentation and were left in the breakroom.

Data Collection

Procedures. A questionnaire was sent to the CRNAs via Qualtrics survey software linked in an email. The pretest was sent out the week before the presentation to allow time for the staff to complete it at their own convenience. There was a 20-minute educational presentation conducted during a staff meeting after which, frailty screening "badge buddies" with the FRAIL Scale and the seminar information were distributed and made available to all CRNAs at the facility. The presentation PowerPoint was distributed to staff via email for reviewing convenience and for viewing if individuals were unable to attend the in-person presentation.

The posttest with the same questions as the pretest was sent out a month after the intervention to allow the staff sufficient time to use the tool if they elected to do so. The only difference in the questions were two additional inclusions to inquire after use of the FRAIL Scale specifically. The data was from a convenience sampling, so all participation was voluntary. No identifying personal information was collected.

Instruments. Data was collected by the Frailty Screening Acceptance and Use Assessment Instrument (Appendix B). This is a novel tool developed for the DNP project and

was used to measure staff acceptance and use of the tool, as the existing literature was absent of a tool to measure the specific variables of interest. The instrument includes several demographic questions to assess the nurse anesthesia provider's years of experience, level of education, gender identity, and intensive care unit (ICU) background. Four questions were written to assess staff perceptions and four questions were written to assess a change in practice. Two follow-up questions were included in the post test only to assess staff perceptions specifically towards the FRAIL Scale. A five-point Likert scale was used for all questions except the demographic assessment. The numeric answer of one on the Likert scale indicated participants 'strongly disagree' with the statement, while the answer of five indicated participants 'strongly agree'. Scores of a two were 'disagree', a three was 'neither agree nor disagree', and four was 'agree'. One non-Likert question was included assessing who CRNAs thought should be responsible for completing frailty screenings.

Data Analysis

Originally, the data collected from the pre and post tests on each domain questionnaire was to be paired and analyzed in Microsoft Excel with a Wilcoxon signed-rank test (alpha<0.05). After discussing with a statistician, it was determined that the number of participants who completed both the pre and the post surveys was too few to grant statistical power to the analysis, so the data was unpaired. IBM SPSS (version 26) was used to determine normalcy of distribution for the domains of perception change and practice change. Shapiro Wilk significance statistic was run for each domain to determine normalcy of distribution. The perception change domain was found to have an abnormal distribution (p=1.00), so a Mann Whitney U test was run in IBM SPSS (alpha < 0.05). The domain of practice change was found to have a normal distribution (p=0.294) so a nonparametric T-Test was run in IBM SPSS (alpha < 0.05). The answers were

reported numerically in a five-point Likert scale and the same group of participants was used for both the pre and post surveys. The goal was to assess whether there was a significant change in the mean scores on the answers before and after the intervention.

Results

Sixteen participants completed the pretest and seven completed the post test. Of those sixteen, eleven participants had an MSN and six had a DNP. Twelve participants were male, three were female, and one preferred not to answer. When asked about their ICU nursing experience, eight participants said they worked in a cardiothoracic surgery ICU, six said they worked in a medical ICU, one participant chose not to answer, and another said they worked in a neuro ICU. Finally, six participants had 1-5 years of CRNA experience, three participants had 6-10 years of experience, four participants had 16-20 years experiences, and three participants had greater than 20 years of experience (see Table 1).

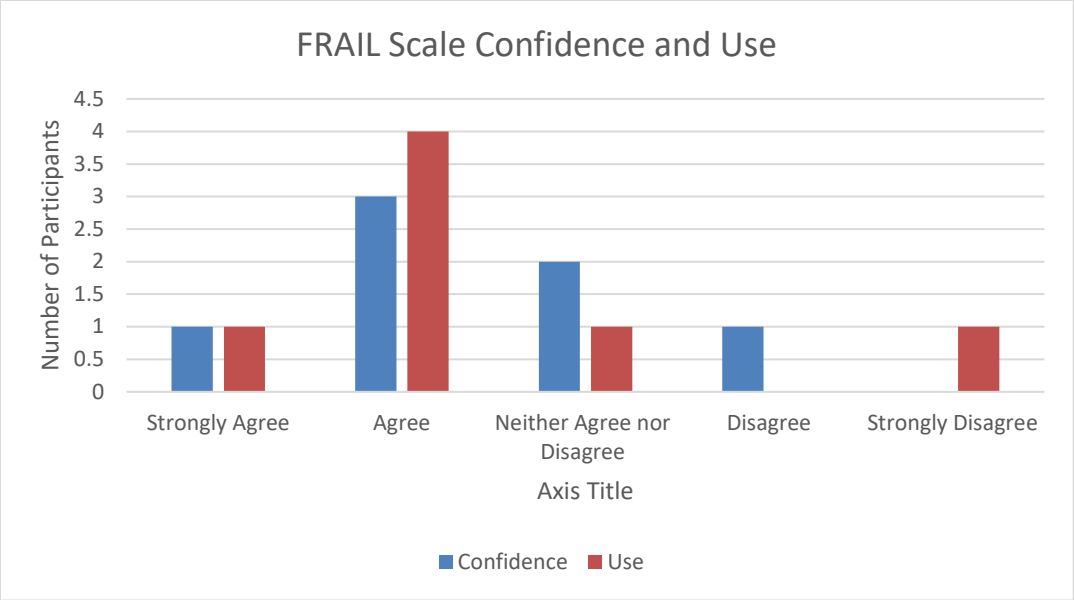
Table 1. Demographics

Years of Experience…	n=
1-5yrs	6
6-10yrs	3
11-15yrs	0
16-20yrs	5
>20yrs	3
Highest Degree…	n=
MSN	11
DNP	5
Gender…	n=
Male	3
Female	12
N/A	1
ICU Background…	n=
Cardiac/CT Surgery	8
Medical	6
Neuro	1
N/A	1

An analysis of the survey responses for the perception changes domain and the practice change domain after the intervention was run in IBM SPSS (version 26) with a Mann Whitney U and a nonparametric T-Test respectively. A Mann Whitney U test was run on the domain of perception, and it was determined that there was no significant change in the pre and post survey responses for perception change before and after the intervention ($p = 1.0$). There was a rise in percentage of respondents who believed CRNAs, the preoperative nurse, and the preoperative anesthesia clinic should be responsible for the frailty screening, and a decrease in the percentage of respondents who thought the anesthesiologist should be responsible for it. A nonparametric T-Test was run on the practice domain, and it was determined that there was no significant change in the pre and post survey responses for practice change before and after the intervention ($p = 0.59$).

After the intervention, 57% of respondents expressed confidence towards using the FRAIL Scale and 71% agreed that it is a useful tool to assess frailty. A smaller number of respondents did not feel confident using it after the education and did not feel that it was a useful tool for their patient frailty assessments (see Graph 1).

Graph 1. FRAIL Scale Confidence and Use



Additionally, a higher percentage of respondents believed that it was the responsibility of CRNAs, preoperative nurses, and the preoperative clinic practitioners who had a responsibility to conduct a frailty screening. A fewer percentage of respondents believed it was the responsibility of the anesthesiologists (see Table 2).

Table 2. Who Should Complete the Frailty Screening

Frailty Screening should be done by…	Pre %	Post %
CRNA	25%	29%
Pre op clinic	38%	43%
Pre op nurse	25%	29%
Anesthesiologist	13%	0%

Discussion

The purpose of the DNP project was to analyze an implementation strategy of frailty screenings in a moderately sized perioperative area that promotes longevity of frailty screening use. It sought to do so by addressing Penchansky and Thomas's Theory of Access, by which the availability of a good or service will increase the use of the thing provided. The hope was to

improve staff perceptions of frailty screening tools with an educational component to establish relevance of their use and providing access to a well-researched screening tool. A secondary aim was to improve identification of frail patients who are at risk of postoperative complications like reduced cognition and impaired recovery from anesthetic medications. Staff perceptions and practice were measured before and after an education and a badge buddy with the FRAIL Scale were provided.

It was found that no significant change in perceptions or practice of the CRNA staff towards use of frailty screenings occurred after the intervention. Most respondents, however, did express confidence towards using the FRAIL Scale provided and believed it to be a useful tool. There was an increase in the percentage of respondents who believed staff (CRNAs, preoperative nurses, and preanesthetic clinicians) had responsibility to complete a frailty screening, and a decrease in those who believed anesthesiologists had that responsibility.

From a demographic standpoint, there were more female than male respondents, which sheds light on the distribution of gender at this facility. There were more MSN than DNP respondents, which was an unexpected finding purely from the standpoint that a DNP education emphasizes participation in research. Most participants had a cardiac surgery or cardiac intensive care background before going into anesthesia. Finally, most respondents had 1-5 years or 16-20 years of anesthesia experience, with only six others having 6-10 year or more than 20 years of anesthesia experience.

While it has been extensively proven that frailty screenings increase identification of frailty in patients, more so than other methods currently used, finding a method to implement them in a meaningful way has continued to be problematic (Callahan et. al, 2021). A discrepancy found that was reflected in this DNP project was disagreement on which subgroup of

perioperative staff should be completing the screenings. This project focused on nurse anesthesia providers, but that limited focus might have served as a barrier to the overall efficacy of the implementation in a multidisciplinary setting. If the study design had broadened the education range to the other disciplines in the perioperative setting like medical doctor anesthesiologist and preoperative nurses, a higher level of success and statistical power might have been achieved.

Another challenge was found to be presenting the information in a way that created buy in from the staff. It is not enough to simply educate and present evidence-based research (Walston et. al, 2018). This was thought to be addressed by removing a barrier to access and providing staff easy access to a well-researched tool. In hindsight, since recruitment failed to yield participation that led to statistically significant data, more effort should have been made during the presentation to facilitate an emotional buy in on an individual level. More emphasis on quality care from nurse anesthesia providers and a personal call to action could have been incorporated into the presentation.

There was a reduction of participation between the pre survey and the post survey, even after contacting the site several times to send out reminders to the staff. A month was given between the presurvey and intervention and the post survey, to allow staff time to use the badge buddy and review the educational presentation. The length of the month time frame may explain the decrease in respondents in the post survey.

Limitations

There were several limitations identified in this DNP project. The first limitation is that of the small sample size. The projects sample consisted of sixteen participants who completed the pre survey, only seven of whom completed the post survey. The original plan was to get an even number of pre and post responses from the pool of forty staff CRNAs at the facility. Having

a smaller, uneven sample size reduces statistical power and ability to detect statistical significance. A larger sample size would lend greater power to determine changes before and after the intervention. Participation may have suffered in part due to the implementation setting. The staff meeting the presentation was given at was not mandatory, and the facility was short staff that day so staff were no actively encouraged by the student clinical coordinator to attend.

The second limitation is inconsistent participation. The statistical analysis was weakened in part because participation dropped during the time between the intervention and the follow up survey. Having a different total with which to average the pre and post survey responses lessens the ability to detect significant differences in responses before and after the intervention. No medium was available in the room given to the presenters to display the presentation effectively, which may have contributed to the interest and participation inconsistency.

The third limitation is lack of prior research on the project design. After an exhaustive search of the literature, there were limited current studies found where the intervention of a badge buddy was used to improve frailty screening use in the clinical setting. While there was no research found about the implementation of an education and a badge buddy to increase the occurrence of frailty screening at a facility, there was evidence of this intervention used in other quality improvement areas like wound care (Lin et. al, 2021). Other evidence of interventions for implementation of frailty screenings existed that were outside the scope of this DNP project.

The fourth limitation is limited access to the sample population and time constraints. The primary researchers were guests at the hospital site, and so had limited access to follow up with the staff. They worked with the CRNA student clinical coordinator liaison to schedule a presentation time and advertise it so staff would attend. The researchers also relied on the liaison to distribute the presentation and badge buddy to staff who could not show up to the presentation

and had to follow up with them to contact the staff for survey response reminders. The limited way in which follow up could occur potentially limited buy-in from staff to complete the surveys. This was all also done within the constraints of the deadlines for DNP project completion.

Recommendations for Future Study

If future studies of this nature were to occur, several changes could be made to address the limitations and improve the design of the project. First and most importantly, the study should be enacted in a current place of employment. This addresses the limitations of small sample size, inconsistent responses, and limited access to the staff for follow up. Working closely with the staff and being able to promote the importance of the research and follow up firsthand with coworkers could create the buy in necessary to receive the number of responses needed for statistical power and a clearer result. It also makes the researcher more available for questions staff may have and clarification. While it could be argued that a coworker led intervention may introduce bias, in order to enhance the longevity of this quality improvement intervention, it may be necessary to have a representative present to champion the importance of frailty screenings in order to achieve long term compliance and use.

An additional change that could be made would be to edit and enhance the study design. The aspects that could be changed are the presentation and the setting it was presented in. First, more of an emphasis needs to be created about the importance of preventing post operative complications in frail patients and how to do so by limiting high risk medications. Second, the presentation needs to be given several times and be better advertised among staff to maximize viewership, and it needs to be given in a setting where the presentation can be displayed for everyone to see.

Relevance and Recommendations for Clinical Practice

This DNP project sought to analyze an implementation strategy of frailty screenings that promotes longevity of frailty screening use. It did so by attempting a method to increase the use of frailty screenings at a midsized hospital in their perioperative setting by providing education and a well-researched screening tool. While the study proved inconclusive, further attempts should continue to be made to improve upon the propject design and to implement frailty screenings in perioperative settings. It is of the utmost importance to protect the elderly surgical population by identifying frailty and using that information to tailor the anesthetic plan (Derwall & Coburn, 2021).

Conclusion

Frailty is a state of reduced physiologic reserve usually seen in the geriatric population (Shaji & McCabe, 2021). It puts patients undergoing anesthesia at increased risk of post-operative delirium (Strøm et. al, 2016). Experiencing delirium after surgery impairs recovery and creates increased costs for the patient and the hospital by prolonging the post anesthesia recovery time (Dhesi et. al, 2019). It is important to identify patients at increased risk, and to tailor the anesthetic plan appropriately by reducing the use of medications that are known to increase the incidence of post-operative delirium (Susano et al., 2020).

Frailty screens have been extensively proven to be reliable and accurate when it comes to identifying frailty in the geriatric population (Derwall & Coburn, 2021). They are more accurate in identifying frailty and patients at increased risk for post-operative delirium than the American Society of Anesthesiologists (ASA) score, which is the current method of gauging a patient's level of health before surgery (Gleason et. al, 2017). Despite the wealth of research and data outlining their importance, frailty screenings have not seen widespread use in clinical

perioperative settings (Derwall & Coburn, 2021). While this DNP project failed to draw any definitive conclusions, future research should continue to investigate barriers to implementation and how to establish use of frailty screenings in a meaningful way (Callahan et. al, 2021).

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Appendix A

FRAIL Scale

FRAIL Scale	
Fatigue	How much time during the previous 4 weeks did you feel tired? (all of the time, most of the time = 1 points)
Resistance	Do you have any difficulty walking up 10 steps alone without resting and without aids? (Yes = 1 point)
Ambulation	Do you have any difficulty walking several hundred years alone with without aids? (Yes = 1 point)
Illness	How many illnesses do you have out of a list of 11 total? (5 or more = 1 point)
Loss of weight	Have you had weight loss of 5% or more? (Yes = 1 point)
(The illnesses include hypertension, diabetes, cancer (other than a minor skin cancer), chronic lung disease, heart attack, congestive heart failure, angina, asthma, arthritis, stroke, and kidney disease).	

Frail Scores range from 0-5, one point for each component, 0=best to 5=worst
Robust = 0 points
Pre-Frail= 1-2 points
Frail = 3-5 points
(de Souza Dias et al., 2020)

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Appendix B

Pre/Post Survey

Demographics

1. Anesthesia years of experience
    a. 1-5 years
    b. 6-10 years
    c. 11-15
    d. 16-20
    e. >20
2. Level of CRNA education
    a. MSN
    b. DNP
3. Gender Identity
    a. Male
    b. Female
    c. Other
    d. Prefer not to answer
4. The majority of my ICU experience prior to beginning an anesthesia program was
    a. Surgical/trauma ICU
    b. Neuro ICU
    c. Cardiac ICU
    d. Medical ICU

Perceptions

1. Access to a standardized frailty screening tool would increase the likelihood that I will use it to assess my patients preoperatively for frailty.
    a. Strongly disagree
    b. Disagree
    c. Neither agree nor disagree
    d. Agree
    e. Strongly Agree
2. A standardized preoperative frailty screening would be a valuable tool for assessing patient's intraoperative risk
    a. Strongly disagree
    b. Disagree
    c. Neither agree nor disagree
    d. Agree
    e. Strongly Agree
3. I can confidently use a frailty screening tool to assess my patient's frailty status.
    a. Strongly disagree
    b. Disagree

c. Neither agree nor disagree
d. Agree
e. Strongly agree

4. Ideally, frailty screening should be completed by
    a. Preanesthetic clinic
    b. Preop nurse
    c. Anesthesiologist
    d. CRNA
    e. Frailty screening is not really worth the additional time/resources

Practice

5. I currently use some method to assess my patient's frailty.
    a. Strongly disagree
    b. Disagree
    c. Neither agree nor disagree
    d. Agree
    e. Strongly agree
6. I tailor my anesthetic plan based of the patient's level of frailty.
    a. Strongly disagree
    b. Disagree
    c. Neither agree nor disagree
    d. Agree
    e. Strongly agree
7. I do give potentially high-risk medications (i.e. midazolam, scopolamine, ketorolac, etc.) to patients 65 years and older.
    a. Strongly disagree
    b. Disagree
    c. Neither agree nor disagree
    d. Agree
    e. Strongly agree
8. I currently use a standardized metric to measure my patient's frailty status.
    a. Strongly disagree
    b. Disagree
    c. Neither agree nor disagree
    d. Agree
    e. Strongly agree

Post Test Only

9. I can confidently use the FRAIL Scale to assess my patient's frailty status.
    a. Strongly disagree
    b. Disagree
    c. Neither agree nor disagree
    d. Agree

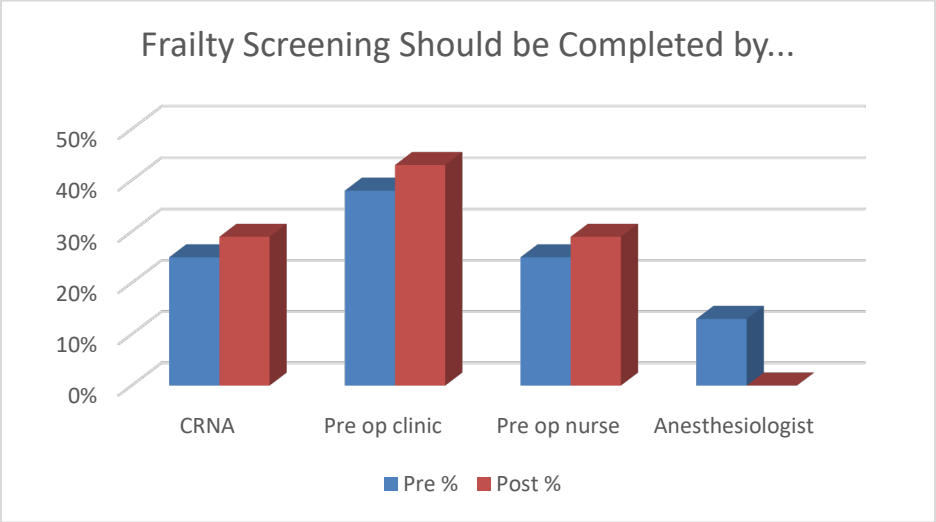
e. Strongly agree

10. The FRAIL Scale is a useful tool to assess a patient's frailty.
    a. Strongly disagree
    b. Disagree
    c. Neither agree nor disagree
    d. Agree
    e. Strongly agree
    f. Strongly agree

Appendix C

Figures

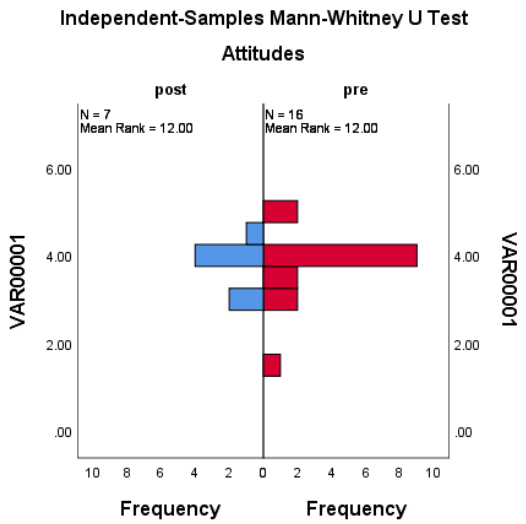
1.



2. Attitudes

Hypothesis Test Summary	Column1	Column2	Column3	Column4
	Null Hypothesis	Test	Sig.	Decision
1	The distribution of VAR00001 is the same across categories of Attitudes.	Independent-Samples Mann-Whitney U Test	1.000[a]	Retain the null hypothesis.

2.1



3. Perceptions

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
VAR00001	0.157	23	0.146	0.950	23	0.294

a. Lilliefors Significance Correction — normal dist.

3.1

t-Test: Two-Sample Assuming Equal Variances

	Pre	*Post*
Mean	3.171875	3.285714286
Variance	0.214322917	0.196428571
Observations	16	7
Pooled Variance	0.209210247	
Hypothesized Mean Difference	0	

df	21
t Stat	-0.54921929
P(T<=t) one-tail	0.294324064
t Critical one-tail	1.720742903
P(T<=t) two-tail	0.588648127
t Critical two-tail	2.079613845

4.