Reduce the Urge, Prevent the Fall

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Abstract

One of the major issues adults greater than 65 face is urinary incontinence (UI). UI has been linked to problems including falls (Chiarelli, Mackenzie, & Osmotherly, 2009). The purpose of this project is to review available research associating UI to falls and to determine if strategies are used to maintain or improve continence, would that have a greater impact on fall reduction than not incorporating those strategies. The target population is adult women 65 years old and older in a hospital setting who may have experienced UI. A pre-test was given to the patients assessing their demographics, knowledge of UI, and knowledge of Kegel exercises. Patients were then taught about how to perform exercises and how to document when exercises were performed in a calendar log. Patients were encouraged to perform exercises 3 times a day while hospitalized. Follow up occurred on a weekly basis while the patients were still hospitalized, and evaluations of the patient and their exercises were made. The number of times the patient did the exercises, number of incontinent episodes, and number of falls were recorded in Excel and SPSS. Ten patients were included in the project over the two-month small test of change. Sixty percent of the patients performed the exercises most of the time, zero falls were reported, and an average of 1.9 incontinent episodes per day were reported. All patients included in the project were able to voice an understanding of Kegel exercises. Teaching patients how to perform Kegel exercises was effective in that the patients were able to verbalize correct performance of exercises. The number of incontinent episodes did decrease; however, further implementation is suggested in a long-term care setting, to gain the full benefit of the exercises and more accurately look at the effect on incontinence and fall rates.
Introduction

As modern medicine continues to progress in the 21st century and becomes more complex, America’s aging population continues to grow. The Department of Health and Human Services Administration on Aging (AOA) (2010) states that the aging population represents 12.9% of the population and is expected to grow to 19% by 2030. Based on adults greater than 65 comprising 1/8 of the current population, health care providers have to become more cognizant of current practice regarding care of older adults. According to Stone and Barbarotta (2010), an extra 3.5 million healthcare professionals will be needed in America by 2030 just in order to have the current ratio of professionals to the population. Healthy People 2020 (2011) state that older adults are one of their priority areas of focus and state that the overall goal is to improve quality of life, function, and health of older adults. Older adults have a high risk for developing many chronic illnesses and other related disabilities (Healthy People, 2011). Older adults also could lose their ability to live by themselves and also experience more frequent hospital stays, lower quality of care, and even nursing home admissions (Healthy People, 2011). This growing group of individuals requires a further look into potential preventable problems they could face.

Significance

One of the major issues adults greater than 65 are more prone to experience is urinary incontinence (UI). UI is defined as loss of bladder control, and affects both men and women, although more prevalent in women. It is estimated that incontinence affects from 31% to 70% of the older adult population (Roe, Flanagan, Jack, Barrett, Chung, Shaw & Williams, 2011). Numerous practices help relieve problems associated with UI
such as bladder training, pelvic floor muscle training, occupational therapy, and incontinence screening. UI has been linked to a multitude of problems such as embarrassment for the individual and falls. Falls cause a cascade of problems for older adults such as: death, mobility issues, and financial burdens on the individual and the family. According to the Centers for Disease Control and Prevention (CDC) (2010), unintentional injury is in the top ten leading causes of death in the United States in 2007, with falls accounting for nearly 50% of the deaths. The Joint Commission (2011) has national patient safety goals for accreditation including reducing the risk of falls through assessing for the risk, implementing interventions, staff and patient education, and evaluation.

**PICO Question**

From learning the significance of potential problems related to UI and falls, a PICO question was formed to further look into the problem. The PICO question states, “In adult women 65 years and older in an acute care setting, how does adding a continence management program into a fall prevention program minimize the frequency, injuries, and morbidity of falls?”

**Purpose**

The purpose of this project is to review available research associating urinary incontinence to falls in the population of adult women 65 years and older in an acute care or hospital setting, and to determine if strategies are used to maintain or improve continence, would that have a greater impact on fall reduction than not incorporating those strategies. To accomplish this, the most effective interventions for maintaining continence will be reviewed. Incontinence in older adults is a problem on its own, so if it
does indeed increase the potential for falling, interventions should not only be geared
toward decreasing falls, but also on increasing the ability to remain continent.

**Goals and Outcomes**

The goal is to decrease the number of fall injuries associated with UI and improve
the overall quality of life for the aging population in the United States by identifying
interventions that are effective in maintaining continence (AOA, 2010). Another goal is
to have an increased awareness of the fact that incontinence can lead to fall among older
adults. Often times older adults view incontinence as a normal part of aging and think it
may go away on its own; therefore, they do not seek help, making incontinence worse
(Chiarelli, Mackenzie, & Osmotherly, 2009). With that being said, older adults should be
encouraged to speak up about bladder control issues so that it does not lead to an adverse
event such as an injurious fall. The priority within the PICO question would be to have
older adults experiencing incontinence participate in a fall prevention program that
incorporates continence management. Ultimately, the intended outcome is to have a
continence program within a fall prevention program that has been demonstrated to be
effective in decreasing falls in an acute care setting or hospital setting.

**Evidence-Based Practice Framework**

Melnyk and Fineout-Overholt (2011) define evidence-based practice (EBP) as a
constant problem-solving way of addressing issues in clinical practice, integrating the
best research to answer important clinical questions, a person’s own expertise in the
clinical area incorporating synthesis and critical appraisal, and the values and preferences
of the patient (p. 4). In researching the EBP, it is important to utilize a framework in
order to help guide the implementation into clinical practice. There are multiple EBP
models to help guide such as the Iowa Model, ARCC-Arizona Model, Russworm and Larrabee’s Model, and the ACE Star Model among others. Theoretical frameworks can also help put research into practice, and many of the theoretical frameworks in nursing are patient centered. As they are patient centered, it helps increase the likelihood of the patient participating in various interventions, allowing them to feel a sense of empowerment. This paper will utilize the ACE Star Model in the application of EBP to the problem of UI and falls and also use Orem’s Self Care Theory to help guide practice.

**ACE Star Model of Knowledge Transformation**

The ACE Star Model of Knowledge Transformation provides a simple outline, using both new and old concepts, to understand and utilize different aspects of EBP (Stevens, 2004). By advancing cutting edge evidence-based nursing, education, and research, the ACE model has a goal of turning research into action and improving overall outcomes and quality of health care through education, research, and EBP (Stevens, 2004). To begin integrating knowledge transformation, the ACE Model uses 5 star points to guide the process of implementing new knowledge into practice. The first star point is discovery in which new knowledge is discovered and research is conducted through a single study, building the foundation for clinical actions to be taken (Stevens, 2004). There has been discovery that UI could increase an individual’s risk of falling. The second star point is evidence summary. Chiarelli, Mackenzie, and Osmotherly (2009) conducted a systematic review asking the question, “Is urinary incontinence associated with falls in community-dwelling older people?” This review concluded that there is a modest correlation with urge urinary incontinence and falls (Chiarelli et al., 2009). The third and forth star points go hand in hand by translation of findings and integration into
practice (Stevens, 2004). According to this study, interventions aimed at decreasing symptoms of urge incontinence, such as behavioral strategies and lifestyle measures, should be incorporated into fall prevention programs (Chiarelli et al., 2009). Clinical practice guidelines should be implemented within these steps for falls and UI. Finally, the last star point in the ACE Model is evaluation of patient and provider satisfaction, health outcomes, and the impact of health status through EBP (Stevens, 2004). In appraising evidence on UI and falls, the ACE Star Model incorporates all of the needed steps to make the correlation with the two issues while providing needed steps to use in discovering the best practices for increasing a patient's quality of life and reducing falls.

**Orem’s Self-Care Theory**

Within the older adult population, many feel that they no longer have a sense of independence, especially if they are hospitalized. To increase their overall sense of worth, it is important to incorporate the patient into their own care. In general nursing practice, Orem’s self-care deficit nursing theory (SCDNT) is one of the most often used and accepted theories (Timmins & Horan, 2007). According to Orem (2001), the SCDNT encompasses three theories including self-care theory, self-care deficit theory, and nursing systems theory. Self-care theory states that self-care is learned purposely, regulating the structure of human integrity, human development and functioning (Orem, 2001). Self-care deficit theory states people can gain from nursing because they are susceptible to health or self-derived restrictions potentially leading to the person not being able to continually care for themselves or could suffer from incomplete care of self. Nursing systems theory states that nurses effectively use their abilities providing care by performing systems of actions that show the value of the individual and therapeutically
meet the self-care demands of the person (Horan, Doran, & Timmins, 2004). All of these theories alone and combined are beneficial for caring for someone. A person can be the most vulnerable when they are in situations outside of what is considered “normal,” making it vital to be able to holistically care for that person in need and hopefully help them gain a sense of independence. UI is associated with feeling a loss of personal independence, restricted social activities for fear of having an accident, social isolation, and additional anxiety (Kim, Suzuki, Yoshida, & Yoshida, 2007). There can also be many fears associated with falling, which is often viewed as a negative outcome, and the patient could suffer from pre and post fall anxiety (Fox, Vazquez, Tonner, Stevens, Fineman, & Ross, 2010). This fear could also lead to social isolation, loss of confidence while ambulating, feeling of helplessness, and even depression (Fox et al., 2010). Many positive physical and psychosocial outcomes can result by having a patient participate in self-care interventions that can increase continence while potentially reducing falls.

**Review of Literature**

In researching the best EBP, it is imperative to look at many literature sources to determine what will ultimately lead to the best outcomes for the patient. Melnyk and Fineout-Overholt (2011) state that effective EBP takes into account a combination of available evidence from several studies, combing it with what the patient prefers and their values as well as the proficiency of the practitioner (p. 4). Literature on falls, UI, and UI in relation to falls will be reviewed to aide in determining the best practice available for managing UI in prevention of falls.
Falls

Unfortunately, falls are a common occurrence in older adults across the world and could lead to many serious and adverse outcomes, such as psychological distress and physical injuries, further leading to a decrease in a person’s quality of life and decrease in physical functioning (Hendriks, Bleijlevens, van Haastregt, Crebolder, Diederiks, Evers, & ... van Eijk, 2008). If a fall is injurious, there is a greater need in utilizing health care providers services (Hendriks et al., 2008). Within acute care settings and long-term care facilities, residents are particularly at risk for falling, having up to 50% of residents falling each year (Rapp, Lamb, Büchele, Lall, Lindemann, & Becker, 2008). Interventions to prevent such adverse events from happening should be addressed.

A study was completed to evaluate the benefits of having an interdisciplinary team approach in reducing falls within hospitals (von Renteln-Kruse & Krause, 2007). This was a prospective cohort study, taking place in Germany (von Renteln-Kruse & Krause, 2007). For a 3-year period before the study began, prevalence of risk factors, frequency of falls, and circumstances surrounding falls were recorded (von Renteln-Kruse & Krause, 2007). The intervention included upon admission into the hospital having a fall-risk assessment and reassessment after a fall, additional assistance for transferring patients and using the toilet, risk alert, information leaflets, counseling on an individual basis for the patient and caregiver, encouraging the patients in using proper assistive devices and aides such as eyeglasses and mobility devices, and education to all staff (von Renteln-Kruse & Krause, 2007). There was not a significant reduction in the total number of falls that were injurious; however, before the intervention, 893 falls were
noted and after the introduction of the prevention program, 468 falls were recorded (von Renteln-Kruse & Krause, 2007).

With the above study being a prospective cohort study, a randomized controlled trial will provide more sound evidence. Hendricks (2008) conducted a randomized controlled trial was performed to see if a multidisciplinary fall prevention program was more effective than ordinary care in preventing falls in the elderly. This study was performed in the Netherlands with community-dwelling people as well as people seen in an emergency room following a fall (Hendriks, 2008). This study specifically focused on falls and UI was not addressed. The intervention consisted of an assessment based on medical and occupational therapy measures to address and appraise potential risk factors for falls and if indicated, recommendations and referral were given. Usual care was given to the control group meaning that no special attention is given to or addressed for risk factors including but not limited to falls (Hendriks, 2008). No statistically significant effects on daily functioning or falls were noted, and the multidisciplinary fall program was deemed ineffective in fall prevention (Hendriks, 2008). Several reasons for possible ineffectiveness are given including an extended period of implementation causing reduced effectiveness, the general practitioners saw patients in the intervention group and the control group which could have influenced their practice, possible deviations from protocol, and a lack of adherence to the trial.

Another randomized controlled trial was performed in Germany to determine if a multifactorial fall prevention program was effective in nursing home residents (Rapp et al., 2008). The intervention period lasted for 12 months and included education to the residents and staff on fall prevention, advice was given on changing the environment, hip
protector recommendations were given, and resistance and balance training were
implemented (Rapp et al., 2008). Within the intervention group, statistically significant
interaction among cognition, fall history, and bladder continence were noted showing
residents with urinary incontinence, impaired cognition, or a positive history of falls had
a greater benefit from the fall prevention program (Rapp et al., 2008).

**Urinary Incontinence (UI)**

UI emerges as a result of various pathologies that have developed because of
systemic issues affecting normal urination and/or age related changes in the genitourinary
system (Aslan, Komurcu, Beji, & Yalcin, 2008). UI can lead to pressure ulcers, perineal
rash, and even urinary tract infections and can also be considered a social problem due to
it causing a negative perception of self and embarrassment (Dumoulin & Hay-Smith,
2010). For these reasons, UI is a serious issue affecting people and an attempt to help
decrease the problem should be sought.

In looking at UI, a Cochrane Review was conducted to determine if pelvic floor
muscle training in women with UI is effective compared to not having any type of pelvic
floor muscle training (Dumoulin & Hay-Smith, 2010). Fourteen studies were reviewed
consisting of randomized controlled trials and quasi-randomized studies (Dumoulin &
Hay-Smith, 2010). Women who participated in the pelvic floor muscle training reported
more improvement and even cure as compared to women who did not participate in
training (Dumoulin & Hay-Smith, 2010). Quality of life was reported to be better in the
women with training and less episodes of UI were reported per day (Dumoulin & Hay-
Smith, 2010).
Pelvic floor muscle exercises can be beneficial as evidenced by the Cochrane Review, and another study not only looked at pelvic floor exercises, but also more exercises. A randomized controlled trial was performed to determine the effect of having multidimensional exercises which targeted reducing symptoms of functional decline, UI, and fear of falling (Kim et al., 2011). This study was specifically looking at community dwelling women with multiple symptoms of geriatric syndrome (Kim et al., 2011). The interventions included an exercise group consisting of 60-minute sessions two times a week for three months, weight-bearing exercise, pelvic floor muscle exercise, ball exercises, chair exercises, resistance band exercise, control training, and walking ability training (Kim et al., 2011). General health education classes were held once a month for three months for the control group (Kim et al., 2011). There was no significant improvement in the control group; however, in the intervention group, there was improvement in muscle strength, walking speed, and balance (Kim et al., 2011). Functional decline and UI significantly decreased in the intervention group (Kim et al., 2011).

Another randomized controlled trial was conducted to determine if bladder training and Kegel exercises for older adult women aged 65 years and older with complaints of urinary problems was effective (Aslan et al., 2008). The intervention consisted of having a pretreatment interview, which involved a quality of life scale, a Mini-Mental test to determine their mental condition, and the Rankin scale, evaluating their functional condition (Aslan, et al., 2008). Following the pretreatment interviews a pad test was performed and digital palpation assessing their pelvic floor muscle strength (Aslan, et al., 2008). A 6-8 week program of bladder training and Kegel exercises was
administered and evaluated in eight weeks and a final evaluation in six months (Aslan, et al., 2008). Findings in this study included that in the intervention group, pelvic floor muscle strength increased, quality of life improved, and decrease in urgency, frequency, and nocturia complaints all compared to the control group (Aslan, et al., 2008).

**Urinary Incontinence and Falls**

Falls and UI are both serious problems for older adults individually, so if combined, both could pose even more serious issues. A possible link between UI and falls could be related to feeling like there is a great need to rush to the toilet when an urge to urinate is felt. Thus, anxiety and distress can occur related to the possibility of not getting to the toilet in time. As a result, falls are often reported as happening in a bathroom (Chiarelli et al., 2009). Performing multiple tasks at a time including concentrating on controlling urine flow, walking, and obstacles to get around to actually get to the bathroom could be unfavorable on maintaining steadiness in older adults (Chiarelli et al., 2009). It is important to investigate effective interventions for both falls and UI to prevent all possible adverse effects of the two.

To determine if a practice-based intervention to improve cognitive impairment, UI, and care for falls could be effective, a controlled trial was performed without randomization (Wenger, Roth, Shekelle, Young, Solomon, Kamberg, & … Reuben, 2009). The intervention consisted of the identification of patients by calling them one week before an outpatient appointment and asking questions about their health since their last visit regarding falls and UI (Wenger et al., 2009). Patients were asked to recall a three-item list after 60 seconds to determine recall ability (Wenger et al., 2009). A note was placed in the patient’s chart for a condition specific intervention to be implemented
to help the patient understand and adhere to the procedure (Wenger et al., 2009). Data was analyzed based on positive responses to whether patients that had fallen were given a fall history, patient’s who had a fear of falling received a mobility and gait evaluation, and patient’s with UI received a urinalysis, incontinence history, and an examination (Wenger et al., 2009). Overall, the care for falls, UI, and/or cognitive impairment improved for patients in the intervention group as compared to the routine care that the patients in the control group received (Wenger et al., 2009). Even though the intervention was noted to improve care, the overall frequency of the implemented care processes was low (Wenger et al., 2009).

Along with discussing both UI and falls, Chiarelli, Mackenzie, and Osmotherly (2009) conducted a systematic review to determine if UI in community dwelling older people was associated with falls. This review was a meta-analysis and systematic review of observational studies taken from nine studies. One study interviewed participants every four months to measure UI with an instrument. Five of the studies collected fall data and two reported using measures of bladder symptoms. Self-report was the predominant means to measure falls and UI. This systematic review found that there is a clear association between UI and falls and that stress urinary incontinence was the least associated with an increase in falls. Effective intervention for UI is suggested to be included in fall prevention programs by this review (Chiarelli et al., 2009).

In summary, UI and falls are a common problem among the older adult population. By using an interdisciplinary team approach (von Renteln-Kruse & Krause, 2007), the number of falls can be reduced; however a multidisciplinary fall prevention program (Hendriks, 2008) was not found to be effective in preventing falls, while a
different study focusing on a multifactorial fall prevention program (Rapp et al., 2008) was effective. Within the multifactorial program, UI prevention was included and performed by exercises in which the residents with urge incontinence benefitted from better strength in the muscles and improved balance (Rapp et al., 2008). While the interdisciplinary approach trial does not specifically target patients with UI, a focus was given to patients who needed bathroom mobility assistance and frequent toileting (von Renteln-Druse & Krause, 2007). Pelvic floor muscle training, as well as other exercises can be effective in improving incontinence in older adult women (Dumoulin & Hay-Smith, 2010; Kim et al., 2011; Aslan, et al., 2008). The care for falls, UI, and/or cognitive impairment improved for patients in the study of a practice-based intervention; however, the actual implementation was reported to be low (Wenger et al., 2009).

According to Chiarelli, Mackenzie, and Osmotherly (2009), there is a clear association with UI and falls; therefore, it is imperative to implement effective interventions into practice settings to prevent any adverse outcomes from occurring.

**Critical Appraisal of Evidence**

Many research articles related to falls and UI were reviewed and appraised to determine what is effective in reducing falls and improving continence. This paper has sought to answer the question asking, “in adult women 65 years and older in an acute care setting, how does adding a continence management program into a fall prevention program minimize the frequency of falls?” Two randomized controlled trials (Level II Evidence) and one prospective cohort study (Level IV Evidence) were evaluated related to falls and fall prevention (Hendriks et al., 2008; Rapp et al., 2008; von Renteln-Kruse & Krause, 2007). In two of the three studies, falls were reduced and improvement was seen
by having a fall prevention program; however, one of the randomized controlled trials concluded that a multidisciplinary fall program was ineffective in fall prevention (Hendriks et al., 2008; Rapp et al., 2008; von Renteln-Kruse & Krause, 2007). Two more randomized controlled trials (Level II Evidence) and a Cochrane Review (Level I Evidence) were reviewed and all of these articles looked at UI and more specifically, multidimensional exercises targeting to reduce symptoms of functional decline, UI, fear of falling, bladder training, Kegel exercises, and pelvic muscle training (Aslan et al., 2008; Dumoulin & Hay-Smith, 2010; Kim et al., 2011). All three of these studies consistently supported that there was improvement in the intervention groups and improvement seen by performing bladder training and pelvic floor muscle exercises (Aslan et al., 2008; Dumoulin & Hay-Smith, 2010; Kim et al., 2011). A systematic review (Level I Evidence) and a controlled trial without randomization (Level III Evidence) both looking at falls and UI were reviewed (Chiarelli et al., 2009; Wenger et al., 2009). These studies revealed a correlation with UI and falls, stating that UI management should be included in fall prevention programs and that interventions were effective in reducing falls and UI (Chiarelli et al., 2009; Wenger et al., 2009). From the studies mentioned above, further appraisal of the evidence including findings, strengths, weaknesses, and validity can be found in Appendix A.

Recommendations

Based on reviewing the literature, the following recommendations can be made. It can be seen through the literature discussed in this paper that fall prevention programs can be effective; however, they may also need additional prevention measures. Although these methods do help determine fall risk and could improve muscle strength and
balance, something more should be done in conjunction with this. Performing pelvic floor muscle exercises to reduce UI has consistently been demonstrated as effective to aide in reducing episodes of incontinence and is given the recommendation grade of A (Aslan et al., 2008; Dumoulin & Hay-Smith, 2010; Kim et al., 2011). Utilizing both a fall prevention program with a continence management program that includes pelvic floor muscle training is recommended and given the grade A (Chiarelli et al., 2009; Wenger et al., 2009). In order for UI to be minimized and falls reduced, the subjects should be willing to change lifestyles and become involved in caring for themselves. One suggested way of changing lifestyles is a schedule to void and performing pelvic floor muscle exercises in order to increase the time between urinations. A great amount of literature can be found on fall prevention alone and on UI. Further research is still needed in demonstrating more effective interventions; however the evidence does show that pelvic floor muscle training is one effective intervention for improving UI.

Implementing a continence management program, including pelvic floor muscle training into a fall prevention program is key in improving continence and ultimately reducing falls among the older adult population.

**Needs Assessment**

Implementation of a continence management program within a fall prevention program will take place on a Medical-Surgical floor at a local hospital in the Southeast. Currently, this hospital has a fall prevention program in place; however, there is not a continence management program outlined within this program.

**Organizational Data**
National Database of Nursing Quality Indicators is used by this hospital to look at falls quarterly (Emily Davis, personal communication, November 17, 2011). In the second quarter of 2011, there were 12 reported falls on the selected Medical-Surgical floor. Out of those falls, 16.67% were reported to have minor injury, and 0.00% for moderate or major injury. The patients with prior fall risk assessment and with the risk assessment performed within the last 24 hours of a fall were both 100%. The percentage of patients at risk was 66.67% and 100% of the patients had the fall protocol initiated. The average number of falls per 1,000 patient days over the past eight quarters was 3.75 (Emily Davis, personal communication, November 17, 2011). Upon the conclusion of the implementation of pelvic floor muscle training, the numbers will be compared to see if there is a decrease in the number of falls. Data on UI is not included.

**Fall Prevention Program**

Upon admission on the Medical-Surgical floor, the patient is assessed for their fall risk. Patients will also be assessed every shift, if there is a change in patient status, if the patient is transferred, and at discharge (Emily Davis, personal communication, November 17, 2011). The hospital uses the Hendrich II Fall Risk Assessment Tool when assessing patients (see Appendix B) (Gray-Miceli, 2007). This tool is a likert-type scale and points are given 0-4 based on each specific category. Confusion/disorientation, depression, altered elimination, dizziness/vertigo, male gender, any prescribed antiepileptic, any prescribed benzodiazepines, the Get-up-and-go Test, able to rise in a single move, pushes up in one attempt, multiple attempts, or unable to rise without assistance are all of the categories being evaluated. Once complete, the points are added together and a score of 5 or greater equals a high-risk patient (Gray-Miceli, 2007). Should the patient score less
than 5, the nurse may make a clinical decision on whether they believe the patient should or should not qualify to be placed on fall risk. If the patient does have altered elimination, no further steps are currently taken to help meet the patient’s needs (Emily Davis, personal communication, November 17, 2011).

If the patient is considered to be at risk for falls, the hospital initiates their fall prevention bundle entitled “Bear Tracks” (Emily Davis, personal communication, November 17, 2011). A yellow label will be placed on the front of the chart to denote that Bear Tracks is in place as well as a yellow sign on the patient’s door to alert all staff. A yellow armband is also placed on the patient. Staff is responsible for answering call lights promptly, making frequent rounds, offering toileting every 2 hours, activating the bed alarm system, and placing treaded socks on the patient. The fall prevention policy highlights direct care, patient education, and the environment of the patient. A patient should have their call light and personal articles within reach, patients should not be left alone up in a chair or on a commode, beds should always be in the lowest position, and two to three side rails should be in the upright position. When a bed alarm and side rails are upright on a person with urge incontinence, there could be the possibility that the patient feels the urge so badly, they climb the side rails, resulting in a fall. Incident reports are utilized in this facility for adverse events such as this (Emily Davis, personal communication, November 17, 2011).

**Incident Reports**

When a fall occurs on this Medical-Surgical floor, an incident report must be completed to give to the Hospital Quality Assurance Committee (Emily Davis, personal communication, November 17, 2011). The form is entitled the “Fall Drill-down form.”
Four categories are in the drill-down form which are patient demographics such as patient age, diagnosis, sex, and time and date of event; event description including was there injury to the patient from the event, if the physician was notified, any tubes or drains contributing to fall, pain, sedative/sleeping, diuretics or laxative medications given within six hours prior to fall, was the patient incontinent, and nurse to patient ratio among other items; safety components including if the chart was labeled, door signage, and yellow armband placed prior to fall, call lights answered promptly, bed alarm on, if tread socks were being worn, side rails up, and if the fall protocol was implemented after the fall; and finally action plan and intervention which has an open area to fill out. The nurse and manager complete this form to be passed up the chain of command to Quality Assurance (Emily Davis, personal communication, November 17, 2011). This form includes asking if the patient was continent; however, it does not focus on UI.

**Key Stakeholders**

Within the hospital, there are several key stakeholders to aide in implementing the findings. The nurse manager and patient care supervisors are key stakeholders in allowing the implementation on the floor. Staff nurses and patient care assistants are also stakeholders in that they will be helping the keep track of incontinent episodes, falls, and reminding the patients to perform pelvic floor muscle exercises. The manager, supervisors, and other staff will also keep each other accountable for the implementation and evaluation. Stakeholders realize a need for more attention to continence related problems and are willing to help in seeing if a continence management program will help their floor.
The current state within this hospital floor is on the right track with fall prevention; however, there is room for improvement. With implementing continence management by performing pelvic floor muscle exercises, it is intended that the floor will see an improved fall rate and reduced number of incontinent episodes. This can be possible with the participation of the key stakeholders.

**Implementation Plan**

Implementing EBP into clinical practice can be challenging, making it imperative to have a proper plan to follow while aiming to change practice. Implementation for this project will be piloted as a small test of change for raised awareness of the benefits associated with pelvic floor muscle training and increased compliance with actually performing the exercises. Permission will be obtained prior to implementation from the hospital, floor manager, and patients. A permission letter has been developed for the patients informing them of what is to be expected through the implementation process and possible benefits from the small test of change. Following the permission letter process, implementation will begin.

**Selected Intervention**

Chiarelli, Mackenzie, and Osmotherly (2009) found that there is an association with UI and falls; therefore, intervention will be aimed at improving UI to ultimately reduce the potential for falls. According to Dumoulin & Hay-Smith (2010), women who participated in the pelvic floor muscle training reported more improvement and even cure as compared to women who did not participate in training as well as their quality of life was reported to be greater and less episodes of UI were reported per day. Another study found that with bladder training/Kegel exercises pelvic floor muscle strength increased,
quality of life improved, and there was a decrease in urgency, frequency, and nocturia complaints (Aslan, et al., 2008). Twelve falls were reported in the second quarter for the selected Medical-Surgical floor, and the floor is currently only implementing fall prevention measures, not continence management measures (Emily Davis, personal communication, November 17, 2011). UI affects many older adults, specifically women (Roe, 2011). With that said, the selected intervention for this Medical-Surgical floor will be implementing pelvic floor muscle training/Kegel exercises for women 65 years and older.

**Implementation Process**

Following permission for implementation, the participating patients who meet the inclusion criteria stated in the PICO question will answer questions on a short pre-test. The pre-test is modified from questions asked in the demographics section on the hospital drill-down report and from a study that was reviewed (Emily Davis, personal communication, November 17, 2011; Wenger et al., 2009). Questions asked will include patient age, diagnosis, history of previous falls, does the patient have a fear of falling, history of incontinent episodes, how UI and/or falls makes the patient feel, has the patient ever heard of pelvic floor muscle training/ Kegel exercises, and does the patient have any suggestions on how to help UI. Implementation will measure only the small test of change in an acute care setting, because many will not be hospitalized for the completion of the project implementation. Teaching the patient proper techniques for pelvic floor muscle exercises will follow the pre-test. For any patient who is still hospitalized at the completion of the proposed timeline, a post-test will be given to measure the patient’s knowledge of pelvic floor muscle exercises, if the patient believes there has been an
improvement and/or benefit, did the patient perform the exercises, did the patient experience fewer incontinent episodes, and if the patient plans to continue exercises after discharge. In addition to a post-test at the completion of the implementation, a separate post-test will be given at the time of discharge for the patients who are discharged prior to the completion of the full implementation. This post-test will ask questions to determine if effective teaching has been met and will ask patients if exercises have been performed in the hospital and if the patient plans to continue exercises after discharge.

Education plans for implementation will be taken from a randomized controlled trial previously discussed. The MSN student will make rounds on the participating patients so that teaching occurs for each patient. Teaching will include explaining the lower urinary system structure, pelvic floor muscle structure, the continence mechanism, any concerns, and how to perform the exercises (Aslan, et al., 2008). While explaining the pelvic floor structure, pictures will also be used to help explain how to contract the pelvic muscles, as well as having the patients stop voiding during urination in order to feel the muscles. The MSN student will also make the hand into a fist as a visual representation of the concept of contraction. Instructions will be given to the participants on how to perform the exercises (see Appendix C) (Aslan, et al., 2008). Participating patients will be encouraged to perform the exercises at least three times a day. In order to monitor progress on whether or not the patients are performing the exercises, a spreadsheet has been formulated (see Appendix D). The spreadsheet log will be adjusted based on how long the patient is hospitalized. Patients will be told to place a tally mark in the box if they have performed their exercises, had an incontinent episode, and/or if they have experienced a fall. The more tally marks in the column under pelvic exercises
and the fewer tally marks in the incontinent and falls category, the greater the chance is that a change is happening. Statistical Package for the Social Sciences (SPSS) will be used to keep track of the number of incontinent episodes, falls, and pelvic floor exercises and it will also allow the MSN student to compare the numbers on a weekly basis. Because this is a small test of change, follow up and evaluation will occur on a weekly basis for the patients, depending on how long the patient is hospitalized. This will consist of checking the daily log to see if the patient is being compliant with filling it out and to monitor the patient’s progress. A final evaluation of the log will be completed at discharge. An information sheet will also be included in the patient’s discharge papers to reiterate the pelvic floor muscle exercises so that the patient may refer back to it for questions. Staff nurses will be informed of the implementation process and will be expected to aide in reminding patients to complete their logs and also to be available if a patient has a question or concern. The small test of change should increase the patient’s knowledge of pelvic floor muscle exercises and by increasing knowledge, compliance with the exercises should be increased.

Facilitators and Barriers

A facilitator of this implementation is the hospital and nursing staff. Someone employed by the hospital will be on the floor at all times, helping to answer questions that may arise and helping to serve as a reminder for the patient to perform the exercises and complete the log. However, if the staff are not willing to help facilitate, they are in turn a potential barrier to implementation. Keeping staff involved could help with implementation. According to Melnyk and Fineout-Overholt (2011) changes that are piloted on a small scale that have a commitment to better practice with staff opinions can
encourage positive attitudes along with engagement for the new and improved practice (p. 216). Another potential barrier could be the patient not feeling comfortable talking about personal issues. To help resolve this, the MSN student will fully explain the implementation through the patient teaching in a non-intimidating, non-judgmental manner. A final barrier could be the patient may not remember to perform the exercises or remember to fill out the log. One solution in addition to the staff reminding patients could be telling the patients to perform exercises when their meals arrive because that would be three times a day. Throughout the patients stay, barriers will be reevaluated if needed, and a solution will be made.

Resources

Within the small test of change, several resources will be utilized for effective implementation. Inside the hospital, resources include help from the nurse manager of the floor and the Quality Assurance Committee. Both of these resources will help in being able to track all of the falls on the floor over the months before and after implementation. Access to a computer and printer are also needed to print materials for the patient and to save data obtained from the logs. Financial resources are limited for implementation; resources are needed for paper, printing, and gas. Personnel needs are the MSN student to educate the patients and evaluate, as well as staff nurses to help the MSN student remind patients to perform exercises and complete the log.

Evaluation Plan

In order to effectively determine if the project has made a change on the floor, proper evaluation measures must be taken. The purpose of this project in the long-term aspect is to determine if strategies are used to maintain or improve continence, would
there be a greater impact on fall reduction than not incorporating those strategies. For the small test of change, the purpose is to increase patient’s awareness of the pelvic muscle structure, how to perform pelvic muscle exercises, possible benefits of the exercises, and increased compliance with performing the exercises. Evaluation will be based on the purpose of the small test of change by determining if learning, behavioral, and quality and safety outcomes have been met.

**Outcomes Measured**

Learning outcomes for the small test of change will be measured using the post-test which determines if teaching has been met, as well as if the spreadsheet log which will be used to determine if the exercises have been performed by the patient. Learning outcomes will have been met if the patient states on the post-test that learning has occurred and can explain how to perform pelvic floor muscle exercises. Whether the patient performed the exercises multiple times a day is a behavioral outcome because the patient will be changing their everyday behavior by adding this exercise into their daily lives. This outcome will be measured by the tally marks on the log under the appropriate column. To ensure patient safety, quality and safety outcomes will be measured based on the fall column of the log. If there are tally marks under the fall column, the short-term goal of patient safety will not have been met. Statistical Package for the Social Sciences (SPSS) will be used to compare the numbers of pelvic floor muscle exercises, incontinent episodes, and falls at the beginning and end of hospitalization. Using SPSS will ultimately aide in evaluating if there has been an overall positive effect of the small test of change.
Stakeholders will be satisfied if a change toward reducing UI and decreasing falls has been made. The stakeholders realize that there is a correlation between UI and falls and understand that if UI is decreased, falls could decrease also (Chiarelli et al., 2009). This particular floor wants to see an overall improvement in patient care and a decrease in any adverse event that is hospital related (Emily Davis, personal communication, November 17, 2011). If there is a decrease in incident reports filled out by this floor, satisfaction will have been met. Stakeholders will be kept informed of the progression of implementation and will be encouraged to be involved. Cost will be examined throughout implementation to ensure that the MSN student is not over budget. A record will be kept to measure all expenses of the project implementation. Being that this is a small test of change being evaluated, a proper timeline will be used so that the project will remain on the small test level.

**Project Timeline**

The projected timeline for the small test of change will be approximately two months. Beginning in mid-January, permission forms will be given to the prospective patients and then the pre-test will be given following obtained permission. Teaching will begin within the next 24 hours. The teaching will take approximately 30 to 45 minutes. It is important to start patient teaching as soon as possible because the patient may not be hospitalized for a long amount of time. Permission letters will be given out on a daily basis as needed based on the patient turnover. There will be weekly follow-ups by the MSN student with the patients. In mid-February the MSN student will look at the overall progress of the implementation and determine if there is compliance with the implementation plan. A final evaluation will be in mid to late March. This is when the
quarterly report of falls will also be reviewed, as well as SPSS to determine if the small test of change was effective.

**Budget**

Along with a relatively small timeframe, the prospective budget for the small test of change is also small. Computer technology to create permission forms, pre and posttest, information sheets, and logs has already been downloaded onto the MSN student’s computer; therefore, no additional payment is needed. Paper to print off the forms will be approximately ten dollars. Visual aids of the pelvic muscle structure will be downloaded and printed at an office supply store and should not cost more than twenty dollars. Time budgeted for the implementation inside the hospital will be approximately ten hours total for all visiting including teaching and follow-ups. In the case appropriate time has not been allotted for the patients, the MSN student will adjust accordingly.

Based on the needs assessment of the Medical-Surgical floor, implementing pelvic floor muscle exercises as form of continence management within the current fall prevention program could prove to decrease the rate of falls in the long run. By using the proposed thorough implementation and evaluation plan over the two month time period, the outcomes of the small test of change can be met.

**Implementation Changes**

Upon discussion with the nurse manager and Quality Assurance Committee, as well as the faculty advisor, IRB approval was not obtained due to time constraints. Written permission letters were not given to the patients because the nurse manager and MSN student agreed that verbal permission would suffice. If any patient stated that they would not like to participate, they did not have to. There were not any patients who were
able to complete the entire small test of change because they were all discharged before the two-month time allotted. Because of this, the final overall follow up could not be obtained, only information at each patient’s discharge. The proposed implementation plan was completed with minimal changes and the discussion of the small test of change will follow.

**Discussion of Small Test of Change**

Within the small test of change, the ACE Star Model was utilized for implementing the change, specifically the steps of translation of findings and integration into practice (Stevens, 2004). The small test of change measured to see if fall rates would be reduced if a continence management program were added into a fall prevention program. Implementation took place January 19, 2012 through March 29, 2012. Data was entered into Excel and then into SPSS at the completion of the small test of change to determine if the implementation was effective. The intervention group consisted of ten women aged 65 and older admitted on a Medical-Surgical floor at a hospital in Alabama. Patient demographics varied with the admitting diagnosis, age, and living arrangements prior to hospitalization (see Table 1).

Table 1. Patient Demographics

<table>
<thead>
<tr>
<th>Patient Demographics</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>M 81.4</td>
</tr>
<tr>
<td>Diagnoses</td>
<td>Respiratory Infection</td>
</tr>
<tr>
<td></td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>UTI</td>
</tr>
<tr>
<td></td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Other Illness</td>
</tr>
<tr>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>Living Arrangements</td>
<td>With Family</td>
</tr>
<tr>
<td></td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>Alone</td>
</tr>
<tr>
<td></td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>With Spouse</td>
</tr>
<tr>
<td></td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>10%</td>
</tr>
</tbody>
</table>
After the MSN student recorded the patient demographics, Kegel exercises were taught to the women. Kegel exercises were encouraged to be performed at least 3 times a day, and this was documented by utilizing a Likert-type scale to determine if the patient performed the exercises all of the time (4), most of the time (3), some of the time (2), rarely (1), or never (0). SPSS was utilized to determine the percentages of patient demographics and Kegels performed. Sixty percent of the women performed the Kegel exercises most of the time (see Table 2).

Table 2. Kegel Exercises Performed

<table>
<thead>
<tr>
<th>Kegels Performed</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Most of the time</td>
<td>60%</td>
</tr>
<tr>
<td>Some of the time</td>
<td>40%</td>
</tr>
</tbody>
</table>

Prior to implementation, the women were asked how many incontinent episodes were experienced on a daily basis. The number of incontinent episodes the patients actually experienced while hospitalized were recorded in order to evaluate the effectiveness of the implementation (see Figure 1).

Figure 1. Incontinent Episodes

Incontinent Episodes
As seen in Figure 1, the number of incontinent episodes decreased post-implementation from 2.1 to 1.9, indicating that Kegel exercises can reduce the number of incontinent episodes. From the implementation, it can be seen that t=1.78 and p=0.54, showing the results were significant in improving continence. Although National Database of Nursing Quality Indicators has yet to release the official scores for the quarter in which implementation took place, it is known that there were no reported falls among women on the hospital floor and 2 falls were reported in men. Ultimately, this shows that it is possible for improved continence to reduce the number of falls that older adults could experience and also that patient safety, quality and safety outcomes were met as well by no having any adverse event occur.

A few other outcomes were met with this small test of change. The learning outcome of increased awareness of Kegel exercises was met as evidenced by the patients being able to explain the Kegel exercises to the MSN student after teaching occurred and in the patients post-test. One patient had difficulty recalling how to explain the exercises, while the other ninety percent of participants were able to explain the process back. Behavioral outcomes were met as evidenced by the patients changing their typical routines by integrating Kegel exercises into their daily activities while hospitalized. This was evidenced by having all of the women performing the exercises with sixty percent performing the exercises all of the time and forty percent most of the time. Stakeholder satisfaction was also an outcome that was met by the floor not having a reduction in adverse events and incident reports being completed.

Overall, all outcomes were met within the small test of change. There was an improvement in the number of incontinent episodes, reduction in fall rates, and learning
did occur. However, there can also be further recommendations for implementation to better the outcomes in the future.

**Future Recommendations**

In order to improve the implementation in the small test of change, it is recommended to implement this test of change in a long-term care facility or a community center where older adults meet multiple times a week. With that said, the patients will more than likely be at their full functional state in either of these settings, whereas when they are admitted into the hospital, they may not feel as well, making them less likely to benefit from any lifestyle changes. Also, in either a long term care facility or community center, there is a greater chance that follow-up can occur over a longer period to determine whether the implementation is effective, leading to the next recommendation. A longer duration for follow up would prove to assist in tracking changes. During the MSN student’s small test of change, most patients were not hospitalized longer than a week or two, making it difficult to determine if the women would be compliant upon discharge. Another recommendation would be to have enough patients to be able to implement these exercises on an intervention group, while having a control group to better compare the ending results.

Along with the recommendations for the small test of change, it is recommended to have new research carry out this implementation within each setting simultaneously, including hospitalized patients, patients in a long term care facility, and community dwelling individuals. Then, at the completion of the research and implementation, it could be determined which setting is the most effective for a change. It is also recommended that UI should be focus of the fall prevention protocol within the hospital
in which the MSN student carried out the small test of change. All in all, the small test of change was successful, and by incorporating these few recommendations, the final results could reach optimal potential.

**Conclusions**

In conclusion, the small test of change revealed UI can improve and fall rates can decrease by adding a continence management program with Kegel exercises into a fall prevention program. Based off of the data, it was determined that older adult women also were willing to incorporate the exercises into their routines, at least while hospitalized.

Key learning experiences the MSN student experienced include discovering how to plan an intervention for a small test of change and implement the outlined intervention. Also being able to utilize Excel and SPSS to determine if the small test of change was effective. For an advanced practice nurse, one must be able to research data, interpret the data, and then ultimately incorporate any changes needed into practice. By doing this, the advanced practice nurse will stay up to date on the most current treatment regimens for patients, allowing the patients to have the best health care outcomes. The MSN student was also able to refine skills in effectively teaching patients not only about how to perform Kegel exercises, but also was able to explain the anatomy involved. The MSN student learned how important continence was in this population and will continue to carry out the knowledge learned as an advanced practice nurse.

To conclude, this project enhanced the MSN students’ abilities in research and implementation and proved to be effective within the small test of change. Knowledge improved for both the student and the patients, UI improved, there were no reported falls in the women participating, and outcomes were met. The hospital floor is currently
discussing putting a larger focus on UI within their current “Bear Tracks” fall prevention program. The EBP project proved to be a successful learning experience for the MSN student as well as for the patients and staff on the Medical-Surgical floor.
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