

# **Implementing a Fall Prevention Protocol for High Fall-Risk Older Adults in a Skilled Nursing Facility.**

STACEY ELETU

Touro University, Nevada

Course Title: In partial fulfillment of the requirements for the Doctor of Nursing Practice DNP Proj

Team: Dr. Samantha Peckham, DNP, MSN, APRN, AGACNP-BC, FNP-BC, ENP-C , Dr Julie Astrella, DNP, RN

June 10, 2022

# Project Overview

---

**Project Aim:** Reduce fall incidents in older adults residing in the skilled nursing facility (SNF)

**Achievements:**

- Reduction in falls in older adults at the SNF.
- Improved staff knowledge and compliance with fall prevention.

**Practice Pearls:**

Factors to reduce the number of falls by older adults in a skilled nursing facility.

1. Implement a fall prevention protocol such as the STEADI initiative.
2. Teach and increase staff knowledge
3. Ensure staff compliance



## DNP Problem

---

### Falls

- A significant health problem
- Serious injuries, such as hip fractures, subdural hematomas
- Death in older adults
- Increase in health care system costs up to \$100 billion in 2030 (Mark & Loomis, 2017).



# DNP Problem contd.

---

## Significance to host site

- Higher older adult fall rates in SNFs
- Increased facility costs: approximately 1.9–10% of the annual income of the facility
- Falls and fall-related injuries are nursing-quality indicators
- Fall reduction represents reduced adverse outcomes for the older adults, the facility, and the nursing staff (King et al., 2018).

## Significance to Nursing

- Crucial role- preserving patient safety and preventing harm
- Must take fall reduction measures in care settings (Vaismoradi et al., 2020).



# Project Problem and Purpose Statement

---

## Problem

- Project site
  - no specific care plans for high-risk fall patients
  - Risk for fall-related monetary loss

## Project Purpose

- Prevent falls in older adults residing in the skilled nursing facility (SNF) by educating staff on implementing the STEADI fall prevention protocol initiative.

# Project Objectives

---

In the timeframe for this DNP project, the plan was for the host site to:

- I. Implement the STEADI toolkit as a protocol for fall prevention within a 4-week time frame.
- II. Administer a training seminar on properly implementing the STEADI fall prevention protocol to 100% of the full-time staff within a 4-week time frame.
- III. Increase staff compliance in implementing the STEADI fall prevention protocol evidenced by documented fall risk screenings, assessments, and interventions on all high fall risk older adults.
- IV. Reduce the number of falls by 20% within a 4-week time frame.

# Literature Review

---

- Literature review themes and key phrases:
  - “Falls in older adults,”
  - “Fall prevention protocols,”
  - “STEADI initiative,”
  - “Staff education on falls”,
  - “Fall prevention programs”
  - “Fall screening tools”,
  - “Falls in nursing homes”
  - “Falls in skilled nursing facilities”



# Literature Review Contd.

---

## Fall outcomes in older adults

- Morbidity and mortality (Uymaz & Nahcivan, 2016).
- Abrasions to traumatic brain injuries or hip fractures (Schoberer et al., 2019).

## Fall Risks in Older adults

- Use of psychotropic medications, cardiovascular medications, spasmodic urinary medications, antidepressants, and benzodiazepines (Andersen et al., 2020).
- Decrease in visual functions such as visual acuity, contrast sensitivity, and stereo acuity (Saftari & Kwon, 2018).
- Orthostatic Hypotension (Mol et al., 2019).
- Reduced by Vitamin D supplementation (Dyer et al., 2019).



# Literature Review Contd.

---

- Fall prevention
  - Systematic screening older patients for fall risk
  - Assessing modifiable fall risk factors
  - Treating the identified risk factors using evidence-based interventions

(Eckstrom et al., 2017).
- A training program for nursing and other front-line staff on resident falls, and injuries in a care facility
  - 5% net reduction in falls and injuries
  - 10 saved events per year in an average-sized facility (Teresi et al., 2018).

# Literature Review Contd.

---

- Effective educational delivery methods for staff
  - Didactic lectures
  - Video presentations
  - Interactive learning activities
  - Experiential learning,
  - Supported learning such as coaching,
  - Written learning material

(Shaw et al., 2020).



# Literature Review Contd.

---

## The CDC's STEADI initiative

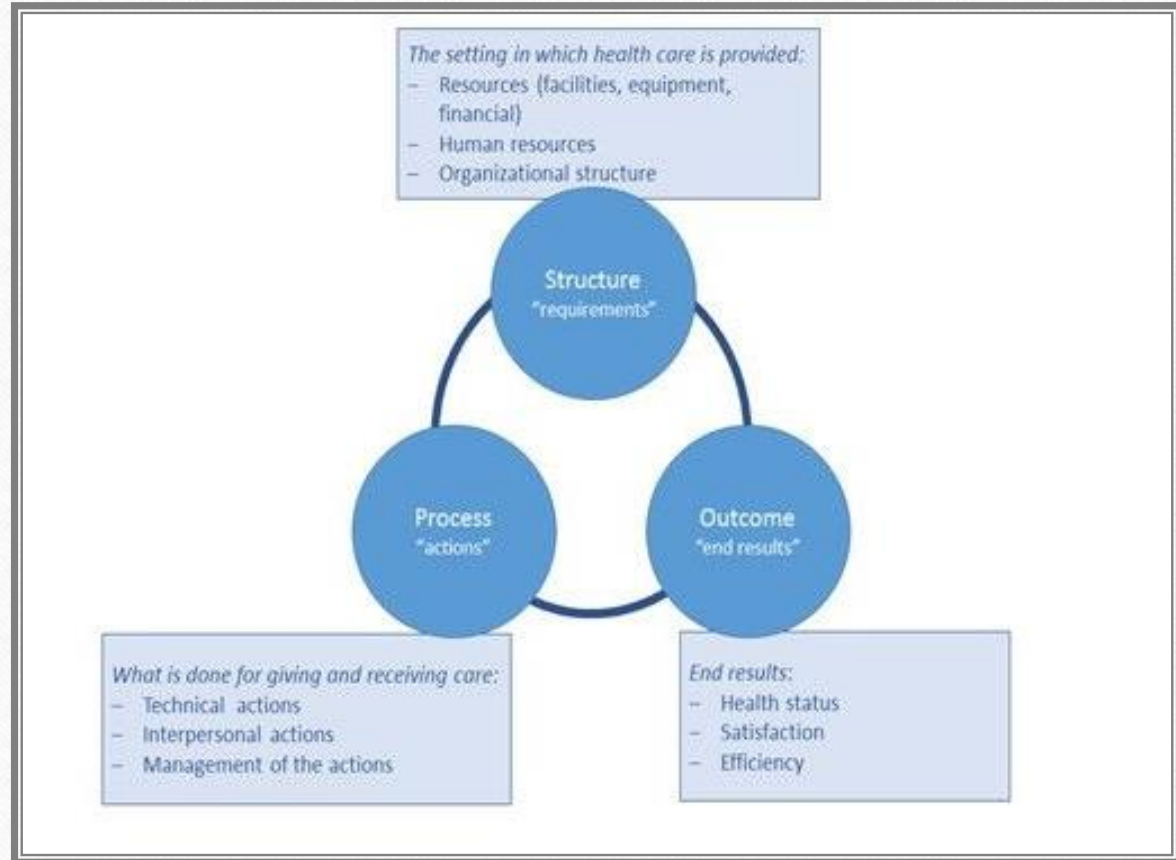
- A practical framework
- Resource for fall prevention and interprofessional education (IPE) activities
- Effective in improving staff knowledge on fall prevention

(Taylor et al., 2019).

---

## Theoretical Model of the DNP Project

### *The Donabedian Model*



*(Tossaint-Schoenmakers et al., 2021)*



# Project Design

---

- Quality Improvement Initiative
  - Institutional Review Board (IRB) not applicable
  - Ethical considerations: patient benefits, confidentiality, and participant consent (Hall et al., 2020).
  - Mandatory staff participation

# Project Design

---

- Project Site- a corporately owned 65-bed skilled nursing facility in Berkeley, CA
- Project Site- Direct care staff
  - Certified nursing assistants (CNAs)
  - Registered nurses (RNs),
  - Licensed vocational nurses (LVNs),
  - Physical therapists, occupational therapists, and a speech therapist.



# Project Design Contd.

---

- Project Time frame: 4 weeks
  - Fall data collection
  - Fall rates analysis
  - Chart evaluation
  - Staff Compliance review
- Project Overview:
  - Staff training seminar on STEADI fall prevention protocol
  - Observation and data collection of staff implementation
  - Evaluation of initiative in reducing falls

# Project Implementation: Tools

---



**STEADI Protocol  
tools**



**Pretest and Posttest**



**Fall Reduction and  
STEADI Compliancy  
Chart Audit**



# Project Implementation

- 1-hour mandatory direct staff training
- 4-week project observation

## STEADI Algorithm for Fall Risk Screening, Assessment, and Intervention among Community-Dwelling Adults 65 years and older

**START HERE**

**1 SCREEN** for fall risk yearly, or any time patient presents with an acute fall.

Available Fall Risk Screening Tools:

• Stay Independent: a 12-question tool [at risk if score  $\geq 4$ ]  
 - Important: If score  $< 4$ , ask if patient fell in the past year (If YES  $\rightarrow$  patient is at risk)

• Three key questions for patients [at risk if YES to any question]  
 - Feels unsteady when standing or walking?  
 - Worries about falling?  
 - Has fallen in past year?  
 • If YES ask, "How many times?" "Were you injured?"

**SCREENED NOT AT RISK**

**PREVENT** future risk by recommending effective prevention strategies.

- Educate patient on fall prevention
- Assess vitamin D intake
  - If deficient, recommend daily vitamin D supplement
- Refer to community exercise or fall prevention program
- Reassess yearly, or any time patient presents with an acute fall

**SCREENED AT RISK**

**2 ASSESS** patient's modifiable risk factors and fall history.

Common ways to assess fall risk factors are listed below:

Evaluate gait, strength, & balance

Common assessments:

- Timed Up & Go
- 4-Stage Balance Test
- 30-Second Chair Stand

Identify medications that increase fall risk (e.g., Beers Criteria)

Ask about potential home hazards (e.g., throw rugs, slippery tub floor)

Measure orthostatic blood pressure (Lying and standing positions)

Check visual acuity

Common assessment tool:

- Snellen eye test

Assess feet/footwear

Assess vitamin D intake

Identify comorbidities

(e.g., depression, osteoporosis)

**3 INTERVENE** to reduce identified risk factors using effective strategies.

**Reduce identified fall risk**

- Discuss patient and provider health goals
  - Develop an individualized patient care plan (see below)
- Below are common interventions used to reduce fall risk:

Poor gait, strength, & balance observed

- Refer for physical therapy
- Refer to evidence-based exercise or fall prevention program (e.g., Tai Chi)

Medication(s) likely to increase fall risk

- Optimize medications by stopping, switching, or reducing dosage of medications that increase fall risk

Home hazards likely

- Refer to occupational therapist to evaluate home safety

Orthostatic hypotension observed

- Stop, switch, or reduce the dose of medications that increase fall risk
- Educate about importance of exercises (e.g., foot pumps)
- Establish appropriate blood pressure goal
- Encourage adequate hydration
- Consider compression stockings

Visual impairment observed

- Refer to ophthalmologist/optometrist
- Stop, switch, or reduce the dose of medication affecting vision (e.g., anticholinergics)
- Consider benefits of cataract surgery
- Provide education on depth perception and single vs. multifocal lenses

Feet/footwear issues identified

- Provide education on shoe fit, traction, insoles, and heel height
- Refer to podiatrist

Vitamin D deficiency observed or likely

- Recommend daily vitamin D supplement

Comorbidities documented

- Optimize treatment of conditions identified
- Be mindful of medications that increase fall risk

**FOLLOW UP** with patient in 30-90 days.

Discuss ways to improve patient receptiveness to the care plan and address barrier(s)



Centers for Disease Control and Prevention  
 National Center for Injury Prevention and Control



# Project Implementation Contd.

## Check Your Risk for Falling

Circle "Yes" or "No" for each statement below			Why it matters
Yes (2)	No (0)	I have fallen in the past year.	People who have fallen once are likely to fall again.
Yes (2)	No (0)	I use or have been advised to use a cane or walker to get around safely.	People who have been advised to use a cane or walker may already be more likely to fall.
Yes (1)	No (0)	Sometimes I feel unsteady when I am walking.	Unsteadiness or needing support while walking are signs of poor balance.
Yes (1)	No (0)	I steady myself by holding onto furniture when walking at home.	This is also a sign of poor balance.
Yes (1)	No (0)	I am worried about falling.	People who are worried about falling are more likely to fall.
Yes (1)	No (0)	I need to push with my hands to stand up from a chair.	This is a sign of weak leg muscles, a major reason for falling.
Yes (1)	No (0)	I have some trouble stepping up onto a curb.	This is also a sign of weak leg muscles.
Yes (1)	No (0)	I often have to rush to the toilet.	Rushing to the bathroom, especially at night, increases your chance of falling.
Yes (1)	No (0)	I have lost some feeling in my feet.	Numbness in your feet can cause stumbles and lead to falls.
Yes (1)	No (0)	I take medicine that sometimes makes me feel light-headed or more tired than usual.	Side effects from medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I take medicine to help me sleep or improve my mood.	These medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I often feel sad or depressed.	Symptoms of depression, such as not feeling well or feeling slowed down, are linked to falls.

**Total** \_\_\_\_\_ Add up the number of points for each "yes" answer. If you scored 4 points or more, you may be at risk for falling. Discuss this brochure with your doctor.

This checklist was developed by the Greater Los Angeles VA Geriatric Research Education Clinical Center and affiliates and is a validated fall risk self-assessment tool (Rubenstein et al. J Safety Res; 2011; 42(6):493-499). Adapted with permission of the authors.

## STEADI Tools

**ASSESSMENT**  
**Timed Up & Go (TUG)**

**Purpose:** To assess mobility  
**Equipment:** A stopwatch  
**Directions:** Patients wear their regular footwear and can use a walking aid, if needed. Begin by having the patient sit back in a standard arm chair and identify a line 3 meters, or 10 feet away, on the floor.

**Instructions to the patient:**  
1. Stand up from the chair.  
2. Walk to the line on the floor at your normal pace.  
3. Turn.  
4. Walk back to the chair at your normal pace.  
5. Sit down again.

**On the word "Go," begin timing.**  
**Stop timing after patient sits back down.**  
**Record time.**

**Time in Seconds:** \_\_\_\_\_

**NOTE:** Patients who use the patient's walker.

**Check all that apply:**  
 Slow to rise  
 Loss of balance  
 Head swaying  
 Stair or uneven walking  
 Swaying left or right  
 Stumbling  
 Double turning  
 Not using correct gait pattern

These changes may signal development of problems that require further evaluation.

**ASSESSMENT**  
**The 4-Stage Balance Test**

**Instructions to the patient:**  
1. Stand with feet shoulder-width apart.  
2. Hold arms straight out to the sides.  
3. Close your eyes.  
4. Stand on one foot.  
5. Stand on the other foot.

**Check all that apply:**  
 Slow to rise  
 Loss of balance  
 Head swaying  
 Stair or uneven walking  
 Swaying left or right  
 Stumbling  
 Double turning  
 Not using correct gait pattern

**ASSESSMENT**  
**30-Second Chair Stand**

**Purpose:** To test leg strength and endurance.  
**Equipment:** A chair with a straight back without arm rests 14-18" high, and a stopwatch.

**Instructions to the patient:**  
1. Sit on the edge of the chair.  
2. Stand up from the chair as fast as you can.  
3. Sit back down.  
4. Stand up again.  
5. Sit back down.  
6. Stand up again.  
7. Sit back down.  
8. Stand up again.  
9. Sit back down.  
10. Stand up again.  
11. Sit back down.  
12. Stand up again.  
13. Sit back down.  
14. Stand up again.  
15. Sit back down.

**Time in Seconds:** \_\_\_\_\_

**ASSESSMENT**  
**Measuring Orthostatic Blood Pressure**

**Instructions to the patient:**  
1. Rest for 5 minutes before the first reading.  
2. Measure blood pressure and pulse rate.  
3. Stand for 1 minute.  
4. Measure blood pressure and pulse rate.  
5. Stand for 3 minutes.  
6. Measure blood pressure and pulse rate.  
7. Stand for 5 minutes.  
8. Measure blood pressure and pulse rate.

**Time in Seconds:** \_\_\_\_\_

SIB questionnaire

Timed Up & Go (TUG)

4-Stage Balance

30-Second Chair Stand

Measuring Orthostatic Blood Pressure

# Project Evaluation

---

Evaluation data post STEADI protocol implementation- to determine:

1. Increased staff knowledge of the STEADI fall prevention protocol.
2. Increased staff compliance with implementing the STEADI protocol.
3. A reduction in the number of falls in the project site in one month.

# Project Evaluation

---

- Data Analysis and Evaluation
  - Pre/Post project fall numbers
  - Staff knowledge on STEADI
  - Staff compliance on STEADI implementation
  - Data analysis with SPSS statistical software



## Project Evaluation Contd.

### Evaluating Staff Knowledge

#### Pre-test Vs Post-Test Scores

- N=14
- A two-tailed paired samples *t*-test
- No statistically significant differences ( $\alpha .05$ ,  $t(13) = -1.71$ ,  $p = .110$ )

PRE-TEST SCORES		POST- TEST SCORES				
M	SD	M	SD	t	p	d
7.29	1.86	7.79	1.53	-1.71	.110	0.46

**Note. N = 14.**

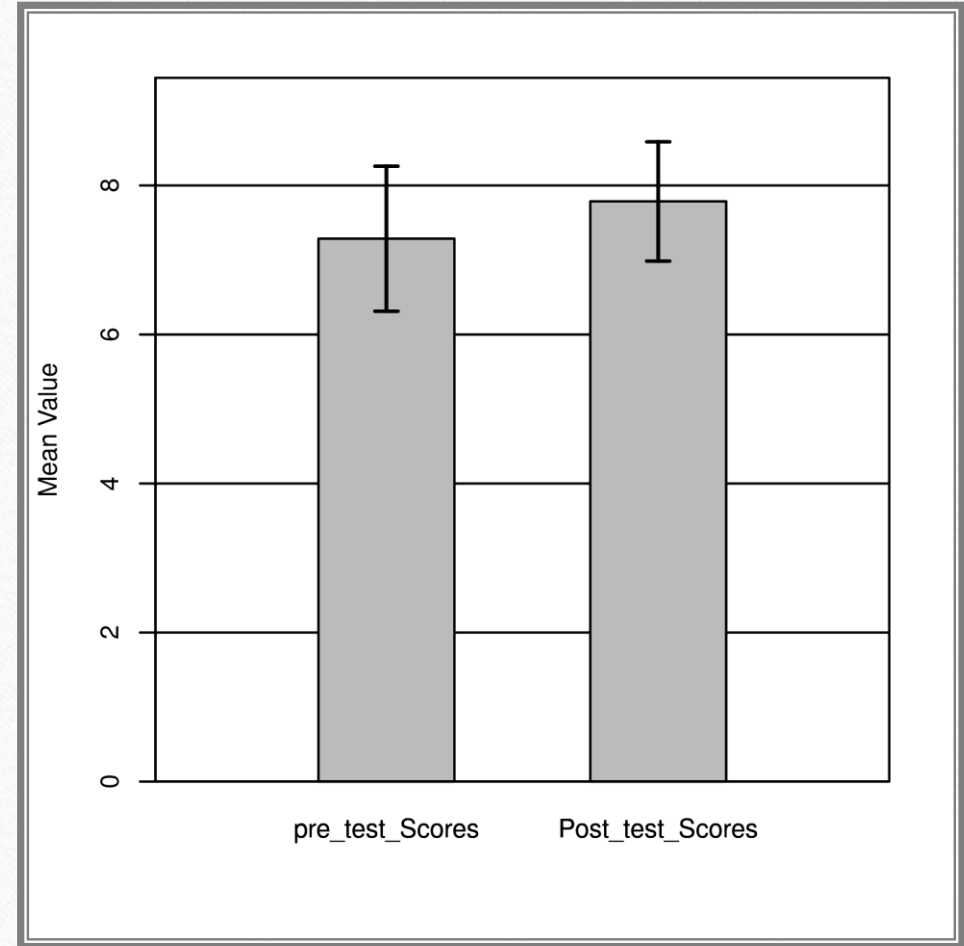
**Degrees of Freedom for the t-statistic = 13.**

**d represents Cohen's d.**

# Project Evaluation Contd.

## Evaluating Staff Knowledge

- Post-test average scores (M= 7.79)
- Pre-test average scores (M= 7.29).



*The Means of Pre-test Scores and Post-test Scores with 95.00% CI Error Bars*

# Project Evaluation Contd.

## Evaluating Staff Compliance

- Descriptive statistics of frequencies
- Staff compliance data results:
  - Screening (  $n = 5$ , 100.00%)
  - Assessment (  $n = 4$ , 80.00%)
  - Intervention (  $n = 4$ , 80.00%)

### Frequencies and percentages for screening, assessment, and intervention.

Variable	<i>n</i>	%
Screening		
Performed	5	100.00
Missing	0	0.00
Assessment		
Not Applicable	4	80.00
Performed	1	20.00
Missing	0	0.00
Intervention		
Not Applicable	4	80.00
Performed	1	20.00
Missing	0	0.00



# Project Evaluation Contd.

## Evaluating Fall Reduction

- Fall reduction: 3 to 1
- 66% decrease in the number of falls.
- Fall rate calculation: number of patient falls x 1,000 divided by the number of patient days.
- Decline in fall rates: 1.9 to 0.6 after post STEADI protocol.

Fall rates (per  
1000 occupied  
bed days) prior  
to project  
implementation

$3 \text{ falls} \times 1000 /$   
 $1620 \text{ bed days} =$   
 $1.9 \text{ falls}$

Fall rates (per  
1000 occupied  
bed days) after  
project  
implementation

$1 \text{ fall} \times 1000 /$   
 $1629 = 0.6 \text{ falls}$

## Project Evaluation Contd.

### Evaluating Fall Reduction

- Paired t-test analysis pre-project falls vs post-project falls.
- No statistical significance ( $p = .159$ )

Pre-project fall numbers		Post-project fall numbers				
M	SD	M	SD	t	p	D
0.06	0.23	0.02	0.14	1.43	.159	0.19

**Note. N = 54. Degrees of Freedom for the t-statistic = 53. d represents Cohen's d.**

## Project Evaluation Contd.

### Evaluating Fall Reduction

- Decline in Falls

Variable	<i>n</i>	%
Pre-project Falls		
Fall Occurred	3	5.56
No Fall	51	94.44
Missing	0	0.00
Post-Project Falls		
Fall Occurred	1	1.85
No Fall	53	98.15
Missing	0	0.00



# Project Limitations

---



## **Project design:**

Quality Improvement study design



## **Data Recruitment:**

Limited Participants- COVID-19 pandemic staffing shortages



## **Collection Methods:**

Limited time frame- 4-weeks

# Conclusion

- The DNP project
  - Donabedian model
  - Fall prevention
  - Staff education on STEADI
- STEADI algorithm
  - Fall risk screening
  - Assessment
  - Interventions
- Data collection
  - Fall reduction,
  - Training effectiveness
  - Staff compliance
- Results
  - Improved staff knowledge
  - Increased staff compliance
  - Reduction in falls.

# Dissemination

---

## Presentations

- Project key stakeholders
  - project mentor
  - facility administrator
  - care staff at the project site.
- Touro University, Nevada DNP program Faculty and Students



# Dissemination Contd.

---

## Submission

- Three other local skilled nursing facilities sister facilities
- Doctor of Nursing Practice Repository
- The Sixteenth Annual Doctor of Nursing Practice Conference, 2023
  - Target Audience: Nursing colleagues and other health care professionals at
- The MAHEC and Western NC 2022 Annual Interprofessional Falls Prevention Conference
  - Target Audience: Healthcare Providers and Aging Services Providers.

# References

---

- Andersen, C. U., Lassen, P. O., Usman, H. Q., Albertsen, N., Nielsen, L. P., & Andersen, S. (2020). Prevalence of medication-related falls in 200 consecutive elderly patients with hip fractures: a cross-sectional study. *BMC Geriatrics*, 20(1), 121. <https://doi.org/10.1186/s12877-020-01532-9>
- Binder C, Torres R.E., Elwell D(2021).Use of the donabedian Model as a Framework for COVID-19 response at a hospital in suburban westchester county, New York: A facility-level case report. *J Emerg Nurs.* 2021 Mar;47(2):239-255. doi:10.1016/j.jen.2020.10.008.Epub 2020 Dec 11. PMID: 33317860; PMCID: PMC7831996.
- Center for Disease Control (2021). CDC STEADI older adult fall prevention: A coordinated care plan. Cdc.gov
- Dyer, S. M., Cumming, R. G., Hill, K. D., Kerse, N., & Cameron, I. D. (2019). Benefits of vitamin D supplementation in older people living in nursing care facilities...Bolland MJ, Grey A, Avenell A. Effects of vitamin D supplementation on musculoskeletal health: a systematic review, meta-analysis, and trial sequential analysis. *Lancet Diabetes Endocrinol* 2018; 6: 847–58. *Age & Ageing*, 48(5), 761–762. <https://doi.org/10.1093/ageing/afz08>
- Eckstrom, E., Parker, E. M., Lambert, G. H., Winkler, G., Dowler, D., & Casey, C. M. (2017). Implementing STEADI in academic primary care to address older adult fallrisk. *Innovation in Aging*, 1(2), igx028. <https://doi.org/10.1093/geroni/igx028>



# References

---

- King, B., Pecanac, K., Krupp, A., Liebzeit, D., & Mahoney, J. (2018). Impact of fall prevention on nurses and care of fall risk patients. *The Gerontologist*, 58(2), 331–340. <https://doi.org/10.1093/geront/gnw156>
- Mark, J. A., & Loomis, J. (2017). The STEADI toolkit: Incorporating a fall prevention guideline into the primary care setting. *Nurse Practitioner*, 42(12), 50–55. <https://doi.org/10.1097/01.NPR.0000525720.06856.34>
- Mol, A., Bui Hoang, P., Sharmin, S., Reijnierse, E. M., van Wezel, R., Meskers, C., & Maier, A. B. (2019). Orthostatic hypotension and falls in older adults: A systematic review and meta-analysis. *Journal of the American Medical Directors Association*, 20(5), 589–597. <https://doi.org/10.1016/j.jamda.2018.11.003>
- Saftari, L. N., & Kwon, O. S. (2018). Ageing vision and falls: a review. *Journal of Physiological Anthropology*, 37(1), 11. <https://doi.org/10.1186/s40101-018-0170-1>
- Schoberer, D., & Breimaier, H. E. (2020). Meta-analysis and GRADE profiles of exercise interventions for falls prevention in long-term care facilities. *Journal of advanced nursing*, 76(1), 121–134. <https://doi.org/10.1111/jan.14238>



# References

---

- Shaw, L., Kiegaldie, D. & Farlie, M.K. Education interventions for health professionals on falls prevention in health care settings: a 10-year scoping review. *BMC Geriatr* 20, 460 (2020). <https://doi.org/10.1186/s12877-020-01819-x>
- Teresi, J. A., Ramírez, M., Fulmer, T., Ellis, J., Silver, S., Kong, J., Eimicke, J. P., Boratgis, G., Meador, R., Lachs, M. S., & Pillemer, K. (2018). Resident-to-Resident Mistreatment: Evaluation of a staff training program in the reduction of falls and injuries. *Journal of Gerontological Nursing*, 44(6), 15–23. <https://doi.org/10.3928/00989134-20180326-01>
- Taylor, D., McCaffrey, R., Reinoso, H., Mathis, M. W., Dickerson, L., Hamrick, J., Madden, S. L., Heard, H. H., Perlow, E., & Klein, C. M. (2019). An interprofessional education approach to fall prevention: preparing members of the interprofessional healthcare team to implement STEADI into practice. *Gerontology & Geriatrics Education*, 40(1), 105–120. <https://doi.org/10.1080/02701960.2018.1530226>
- Tossaint-Schoenmakers, R., Versluis, A., Chavannes, N., Talboom-Kamp, E., & Kasteleyn, M. (2021). The challenge of integrating eHealth into health care: Systematic literature review of the donabedian model of structure, process, and outcome. *Journal of Medical Internet Research*, 23(5), e27180. <https://doi.org/10.2196/27180>

# References

---

- Vaismoradi, M., Tella, S., A Logan, P., Khakurel, J., & Vizcaya-Moreno, F. (2020). Nurses' adherence to patient safety principles: A Systematic Review. *International Journal of Environmental Research and Public Health*, 17(6), 2028.  
<https://doi.org/10.3390/ijerph17062028>