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Fall Risk Screening in Community Dwelling Elders through Self-Assessment

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Abstract

Problem: Falls and fall-related injuries are considered preventable. Fall risk screening is crucial in the prevention of falls and fall-related injuries in community dwelling elders. The purpose of this quality improvement project was to initiate the use of the CDC's self-rated Fall Risk Questionnaire (Self-rated FRQ) screening tool and CDC-guided education in a cohort of community dwelling seniors at a geriatric agency.

Method: A pre-post assessment was conducted on community dwelling seniors 65-years and older. A convenience sample of eligible participants (N=16) was taken from a geriatric agency in a Midwest, metropolitan city. Fall incidence and fall-related injuries were assessed eight weeks before and after implementation of the Self-rated FRQ and CDC-guided education with a retrospective chart review and self-reported data. Individual Zoom calls were conducted with each participant by the principal investigator. At this time, the screening tool was verbally administered with a 15-minute open-ended education session. Common risk factors were identified based on the results of the Self-rated FRQ. Additional questions were addressed regarding utilization of an assistive device and self-rated risk for falling.

Results: After implementation, thirteen participants were considered a high risk for falling (81.25%). There was an 85% reduction in falls pre-intervention to post-intervention and a 0% reduction in fall related injuries. Population means were not statistically significant based on the Wilcoxon-Signed Rank test (T=2.50, z=-1.725, p=0.84).

Implications for Practice: This quality improvement project demonstrates that fall screening can be effective in a community setting the screening tool can be utilized by the geriatric agency with routine annual assessments and after new falls.

Fall Risk Screening in Community Dwelling Elder through Self-Assessment

In the United States, every second of each day, an older adult, aged 65 years and older, falls (Centers for Disease Control and Prevention (CDC), 2020a). According to the World Health Organization (WHO), (2018), falls and fall-related injuries are a leading cause of injury death across the globe. With advanced age, the risk of death or serious injury related to a fall subsequently increases (WHO, 2018).   In 2018, there were approximately 3 million fall-related emergency department visits, over 950,000 inpatient hospitalizations or transfers, and an estimated 32,000 fall-related deaths among older adults in the United States (CDC, 2020b). Worldwide, falls are the cause of 17 million disability-adjusted life years (DALY) lost (WHO, 2018). For the aging adult, the impact of DALY lost can lead to long term care or institutionalism (WHO, 2018). This transition from senior independence to the need for long term assistance can be burdensome to the senior, his or her loved ones, and society (Gamage et al, 2018). To eliminate this preemptive reality, prevention is key. Falls are considered preventable and are not an aging normalcy (CDC, 2020a). According to the American Geriatrics Society (AGS) and the British Geriatrics Society (BGS), older adults should be screened once a year for a fall history or balance abnormality (Van Voast Moncada & Glen Mire, 2017). Since 60% of falls occur at home (National Safety Council (NSC), 2021), it is vital to provide community-dwelling elders, caregivers and families with the tools and resources to maintain fall safety at home.

According to WHO (2018), a fall can be defined as any occurrence resulting in a person unintentionally having a descending positional change. In the United States, falls are common in approximately one-third of community dwelling elders; 10% of these falls

result in a serious injury (Zhang et al., 2019). The consequences of a fall extend far

beyond the initial event. Disability, new-onset dependence, fear, financial implications,

loneliness, and death can become fall-induced realities affecting the individual, family,

and public (Kim et al., 2020; Zhang et al., 2019). In 2015, the United States spent over 50

billion dollars on fall-related injuries and 750 million dollars on fall-related deaths

(National Conference of State Legislatures (NCSL), 2021). To further these financial and

social implications, if an older adult has one fall, he or she is twice as likely to experience

a subsequent fall (NCSL, 2021).

A key to preventing falls is being knowledgeable of the risks associated with

falling and how to mitigate them (NSCL, 2021). In a research study conducted by

Gamage et al. (2018), the knowledge and perception of falls were examined in 300

community-dwelling elders. The results of the study demonstrated that 51.9% of

participants the prior year reported a fall and subsequently, possessed a poor knowledge

related to fall risks (Gamage et al., 2018). In a cross-sectional study based out of India,

both seniors and caregivers reported poor knowledge regarding fall prevention (Gutta et

al., 2013). In fact, 12% of the seniors believed that falls were inevitable and a normal

part of aging (Gutta et al., 2013). Knowledge of fall risk and fall prevention measures by

older adults and caregivers is paramount to the prevention of falls in the aging adult

(Gutta et al., 2013).

According to WHO (2021), fall risk prevention strategies can be multifaceted.

This complexity is because a single fall can be based on a diverse combination of

intrinsic, extrinsic, attitudinal, and behavioral risk factors (AOTA, 2014; Zhang et al.,

2019). Due to this potential array, individualized single factor and multi-factorial

interventions have proven to be valuable in reducing fall rate (AOTA, 2014). Currently,

typical fall risk assessments are conducted in a medical setting and reliant on a trained

professional; therefore, implementation is subject to the priorities of the medical and

nursing staff (Rasche et al., 2017). Since seniors may underestimate their personal

susceptibility of falling, empowering seniors with a home-based screening tool can be

advantageous as an initial step in fall prevention (Rasche et al., 2017; Vivrette et al.,

2011). The lack of personal awareness regarding falls has rarely been acknowledged in

research as a self-risk despite its contribution to motivation and behavior change

(Vivrette et al., 2011). A simple self-risk assessment can create patient, family, and

caregiver awareness of the need for personalized professional interventions (Rasche et

al., 2017). The tool would then advise open dialogue with primary care providers (PCPs)

to individualize a fall prevention plan of care. From the results of an initial self-

assessment, PCPs can then subsequently perform a clinical fall risk assessment if

warranted (Rasche et al., 2017). The CDC has developed a national program called the

Stopping Elderly Accidents, Deaths & Injuries Initiative (STEADI Initiative) to help

guide health care providers in providing fall reduction interventions (CDC, nd). The

STEADI Initiative is a multifaceted program composed of three key components:

screening, assessing, and intervening (CDC, nd).

In this quality improvement project, the screening component of the STEADI

initiative will be implemented in a Midwestern elder care agency that provides in-home

medical care and consumer-directed services to community dwelling elders. This effort

will be an opportunity to improve fall risk prevention. To guide this quality improvement

project, the Plan-Do-Study-Act (PDSA) cycle will be utilized. The purpose of this

quality improvement project is to initiate the use of the CDC's self-rated Fall Risk

Questionnaire (self-rated FRQ) and CDC-guided education in a cohort of community

dwelling seniors receiving in-home medical care or consumer-directed services. The aim

of this quality improvement project is to decrease the percentage of falls and fall-related

injuries occurring in community-dwelling elders by 15% in a period of eight weeks after

intervention. Primary outcome measures will include 1.) The number of reported falls

before and at eight weeks post-implementation of the project, 2.) The number of reported

fall related injuries before and at eight weeks post-implementation of the project.

Secondary outcome measure will include 1.) the number of identified community

dwelling elders at risk for falling 2.) identification of common fall risk items in agency

community dwelling elders. The project question is: In a cohort of community dwelling

elders receiving services from an elder care agency, how does the implementation of a

self-directed fall risk screening tool and CDC-guided fall risk prevention education affect

the incidence of falls and fall related injuries?

Review of Literature

To conduct this literature search, PubMed, CINAHL, Medline, and EBSCO were

utilized. Key search terms and phrases included: *subjective, self, fall risk, screening,*

community dwelling with use of the Boolen operators AND and OR. Initially, the search

generated 215 articles based on the search terms and phrases. Inclusion criteria included:

studies within 2016-2021, ages 65 years and older, community dwelling and English

language publication. To ensure the most current information, publications were only

examined within the past five years. Exclusion criteria included studies not published in

English, ages 64 years and younger, and residing in assisted living or nursing home.

After inclusion and exclusion criteria were applied, 71 articles were generated and ultimately 11 articles were utilized for review.

An older adult's perception of individualized fall risk has been acknowledged as a component of fall prevention screening. In a study conducted by Rodríguez-Molinero et al. (2017), personal estimation of fall risk was examined in 460 Spanish community dwelling elders. By utilizing a short self-assessment composed of questions regarding fall history and likelihood of fall, this study demonstrated validity for predicting falls (Rodríguez-Molinero et al., 2017). More specifically, the results showed 70% and 72% sensitivity and specificity, respectively, for prediction of falls in the following year for those who estimated themselves at risk (Rodríguez-Molinero et al., 2017). In another study conducted by Thiamwong et al. (2020), subjective fall risk appraisal was examined in 102 community dwelling elders living in Orlando, Florida. Through the Fall Efficacy Scale-International and a technological balance system, this cross-sectional study demonstrated that perceived fall risk was correlated with physiological risk (Thiamwong et al., 2020). The results of the study showed that 60% of the participants had perceived risk parallel to physiological risk (Thiamwong et al., 2020). This study was consistent with Rodríguez-Molinero et al. (2017) illustrating perception of fall risk and risk awareness as an adequate factor to screen in fall prevention intervention. Both studies show similarity in demonstrating an older adult's perception of fall risk relating to incidence of falling.

Typical fall risk screenings and functional assessment recommendations are based on a multi-factorial approach. According to the AGS and BGS guidelines, fall prevention programs should be composed of a short screening evaluation, a multidimensional risk

assessment, and specific interventions (Palumbo et al., 2019). In a study conducted by

Palumbo et al. (2019), the AGS and BGS guidelines were evaluated for predictability and

impact on falls. When using the tools, sensitivity rate of predicting a single fall was

between 35 and 43% and the specificity rate was 79 and 84% (Palumbo et al., 2019). In

another study by Gell & Patel (2019), a comprehensive geriatric fall risk assessment was

implemented on 7,444 nationally represented Medicare beneficiaries. After an in-person

screening and functional screening assessment, each participant's risk level was

determined based on the STEADI algorithm and compared to utilization of rehabilitation

services (Gell & Patel, 2019).   The results of this study illustrated that 29.9% of the

study participants screened as moderate risk and 11.6% of participants were screened as

high risk (Gell & Patel, 2019). Despite this data, less than half of high-risk participants

had received any type of rehabilitation service in the past year; and of those that received

rehabilitation, only one third reported fall intervention in their treatment plan (Gell &

Patel, 2019). According to the STEADI algorithm, an individualized fall intervention for

high-risk individuals includes rehabilitation services (CDC, nd). This study result

highlights nonadherence to national recommendations as a critical gap in implementation

of multidimensional fall interventions.

Limitations do exist when fall risk interventions are based on a singular approach.

Functional mobility screenings are partial to the exact moment of assessment and may

underestimate risk of falls due to the inability to capture high risk situations, such as

morning balance instability due to nocturnal medications (Rodríguez-Molinero et al.,

2017). In fact, in a longitudinal study conducted by Kang et al. (2017), when the Timed

Up and Go Test (TUGT), 4-meter walking test, and grip strength were implemented on a

group of community dwelling elders in China as single item tool there was no predictive

value of falls in any assessment. This presents a weakness in solely utilizing functional

screening assessments as means of screening. Self-reported fall history also poses barriers

due to memory bias (Rodríguez-Molinero et al., 2017). In all 11 of the studies for this

literature review, self-reported fall history was utilized as a means of screening. This is

consistent with the general theme that once an older adult experiences one fall, he or she

is more than likely to experience a second fall or more (NCLS, 2021). Fall history is an

adequate factor to incorporate in self-screening of fall risk.

     To ensure the effectiveness of fall risk screening, the screening tool must be

validated in a specific population (NG et al., 2020). Ng et al. (2020) utilized a modified

version of the Fall Risks for Older People in the Community Screening tool (FROP-Com

screen) to screen for fall risk in community dwelling elders with history of a stroke. In

this study, the FROP-Com screen was compared with various functional assessments

including the subjective balance confidence (ABC-C) test (NG et al., 2020). The results

of the study show a moderate association between the FROP-Com screen and the ABC-

C, the TUG, and the Berg Balance Scale (NG et al., 2020). This finding regarding the

TUG assessment is inconsistent with the study by Kang et al. (2017). However, it further

illustrates the impact of utilizing a multidimensional approach to determine fall risk as

stated in the studies by Gell & Patel (2019) and Palumbo et al. (2019).   In another study,

two population-specific screening tools were compared to determine fall risk in hearing

impaired elderly (Criter & Honaker, 2017). The Hearing Handicap Inventory for the

Elderly (HHIE) screening tool adequately recognized patients with a recent fall (Criter &

Honaker, 2017). The Dizziness Handicap Inventory (DHI) tool, however, was most

specific in identifying patients without a risk for falling (Criter & Honaker, 2017).

Consistent with NG et al. (2020), this study also demonstrated that the TUG assessment

was instrumental in predicting fall incidence. Another example of a specific fall

screening tool was designed for the elderly Thai population (Loonlawong et al., 2019).

The results of this study illustrated that a modified Thai Stay Independent Brochure

screening tool was an appropriate screening method for fall risk identification

(Loonlawong et al., 2019). Through each of these population-specific screening tools, it

demonstrates the impact of having a fall risk screen validated in the target population.

To further illustrate this validation process, several articles highlight the impact of

screening for specific physiological factors in fall prevention. This theme is consistent

with the study conducted by Thiamwong et al. (2020) in which perceived fall risk is

associated with physiologic risk. In a study conducted by McDaniels-Davidson et al.

(2020), kyphosis was identified as a fall risk screening factor for falls in community

dwelling elders. To measure kyphosis, the Block Method is a method utilized which

involves the measurement and placement of blocks underneath an individual's head to

achieve a neutral position (McDaniels-Davidson et al., 2020). In relation to fall risk

screening, for every 1.4 block increase in measurement, a 12% increase in falls over three

years was determined (McDaniels-Davidson et al., 2020). In another study by Kamitani

et al. (2019), subjective fatigue was compared to fall incidence over a two-year period in

751 community dwelling elders. Subjective fatigue was correlated with fall incidence

with 31.4% of the study participants experiencing a fall (Kamitani et al., 2019). Through

these articles, it can be determined that specific physiological factors can be utilized in

fall risk screening.

With the variety of screening options, fall risk screening does not have to be limited to an individual, a PCP, or specific location. In a study conducted by Loonlawong et al. (2019), a modified Stay Independent Brochure (SIB) was successfully implemented through self-administration or by front-line health care personnel without medical training (Loonlawong et al., 2019). Based on risk identification, further evaluation was then conducted by a trained professional (Loonlawong et al., 2019). Nithman & Vincenzo (2019) examined the impact of the Stay Independent Brochure and STEADI toolkit in a community setting when implemented by physical therapists. Prior to implementation, over 52% of participants reported falls within the past year (Nithman & Vincenzo, 2019). Within 6 months of receiving the STEADI fall intervention, 19 (27%) of the 68 study participants reported a fall (Nithman & Vincenzo, 2019). While the incidence of fall rates was rather high, this study illustrates the ability of non-physician implementation of fall risk screening and intervention. Nonadherence posed as a barrier in this study with only 48.5% of participants following through with post-STEADI recommendations and referrals (Nithman & Vincenzo, 2019). Consistent with the Gell & Patel (2019) study, nonadherence in this study also represents a gap in adequate implementation of a multidimensional fall prevention approach.

The theoretical framework that will guide this project will be the PDSA cycle based on the Healthcare Improvements Model for Change. According to the Agency for Healthcare Research and Quality (AHRQ) (2020), the premise of the PDSA cycle is based on a four-step system: creating a plan, observing the intervention, analyzing results, and ending with an action. The premise of this framework is based on incorporating small scale change. Since the elder care agency utilized in this quality

improvement project does not have any current fall screening in place, it is vital to

introduce potential change at a relatively slow rate. In addition, this model allows for

continuous improvement or alteration to an intervention based on outcome evaluation.

This model will allow for a fall screening intervention to be developed that is unique to

this setting.

In summary, fall prevention screening is an adequate initial step in determining

risk for fall and initiating intervention in community dwelling elders. A commonality in

each of the studies was the screening for falls in the past. This idea is parallel to the

reality that once an older adult has one fall, he or she is likely to experience subsequent

falls. Through this literature review, it can be determined that the most effective means

of fall prevention consists of a multifactorial approach consistent with national

guidelines. The CDC STEADI toolkit, which includes the self-rated Fall Risk

Questionnaire (self-rated FRQ) and the "Stay Independent-Avoid a Fall" education

brochure, was the practice guideline utilized in three of the studies. Through the

implication of this tool, initial risk level can be measured to serve as a guide for proper

interventions. As the review of literature demonstrated, a trained medical professional

does not have to be involved with administration of this tool which represents an

opportunity for more screening options in community settings. Gaps in the literature do

exist regarding the fall risk screening. None of these articles mentioned the utilization of

fall risk education in combination with screening. Education is essential to fall

prevention to help with compliance of recommendations. Nonadherence was a common

theme noted in this literature review and represents an opportunity for further study. This

project utilized the PDSA cycle to combine fall prevention education with a subjective

fall risk screening tool to implement change in an elder care agency. For the fall

prevention interventions to be effective, it is imperative that individuals are educated in

how to adhere to fall prevention recommendations. In conclusion, fall risk screening and

fall education are critical first steps in fall prevention in community dwelling elders.

Methods

Design. This quality improvement project assessed fall incidence and fall-related

injuries in community dwelling elders, aged 65 years and older, before and after the

implementation of a self-rated fall risk questionnaire (Appendix A) and CDC-guided

education, "Stay Independent" Brochure and "What You Can Do to Prevent Falls"

Brochure. Methods to gather data regarding incidence of falls and fall related injuries

included self-reported data and a retrospective chart review. Retrospective data collected

was based on eight weeks prior to intervention. The implementation of this project was

between February and May 2022.

Setting. The elder care agency utilized in this quality improvement project was

privately owned and located in a Midwestern, metropolitan city. The elder care agency

provides assorted services to the geriatric population including adult day care services,

in-home nursing care, and consumer directed services. The agency has a total of 5 full-

time staff and 60 part-time staff. For this project, individuals receiving in-home nursing

care and consumer directed services were utilized. These services are provided in the

community and at the individual's place of residence.

Sample. A convenience sample from community dwelling elders receiving

consumer-directed services or in-home nursing services from an elder care agency were

recruited for this quality improvement project. The services offered at the elder care

agency are provided through the state Division of Senior and Disability Services. These

programs are designed to help individuals remain in their home and deter intuitionalism.

To receive services through the elder care agency, a recipient must receive Medicaid

services, be 60 years and older, or be between the age of 18 and 59 and have a disability.

In-home services include an initial intake assessment from a nurse. Services may include

assistance with ADLs, nursing services, respite care, and housekeeping. Consumer-

directed services are for individuals with a disability and are provided by a non-licensed

professional of the recipients choosing. The ability to dictate care needs is a requirement

for consumer-directed services. These services include personal care assistance such as

meal assistance, grocery shopping and chore work. Quarterly in-home visits are

performed for recipients of each service. Fall risk screening or assessment is not a

component of these quarterly visits.

Inclusion criteria for participation in this project included: 1. Age 65 years and

older, 2. Living in an independent senior living building or private residential home, 3.

Ability to ambulate with or without assistance (including assistive devices or caregiver).

Exclusion criteria included: 1. Individuals that are wheelchair or bedbound, 2. Living in a

nursing home or skilled-nursing facility 3. Non-English speaking, and 4. Inability to

access virtual Zoom call. Participants were recruited through a recruitment flyer made by

the principal investigator and distributed by geriatric agency.

Data Collection/Analysis. All data was coded for confidentiality, and all

identifiers were removed prior to data analysis. All data collected was inserted onto a

data collection tool constructed by principal investigator. Demographic identification

including age, sex, race, and daily living needs, were obtained from a retrospective chart

review. Fall history, including number of falls and fall-related injuries, were obtained

through self-reported information and a retrospective chart review. Results of the self-

rated Fall Risk Questionnaire were recorded, calculated, and collected by primary

investigator. Self-reported data was obtained through a Zoom call pre-intervention and

via phone call post-intervention. Risk factors identified through self-assessment were

analyzed through the mode, a measure of central tendency. All data information collected

was entered into a Microsoft Excel sheet by student principal investigator. Student

principal investigator was a certified Family Nurse Practitioner who works in a

community setting with geriatrics. Student principal investigator received continuing

education training on CDC's STEADI program.

In order to connect the data and maintain anonymity, participants were assigned a

random participant ID. The coding identification information was kept separate from all

identifiable data and destroyed as soon as data was prepared for analysis. All information

was stored on a password-protected computer. The validated instrument utilized in this

study included the self-rated Fall Risk Questionnaire (self-rated FRQ) from the STEADI

toolkit. The self-rated FRQ was developed by the Greater Los Angeles VA Geriatric

Research Education Clinical Center and considered a validated self-risk assessment tool

for falls (CDC, 2017). The purpose of this questionnaire was to determine risk of falling

by calculating the amount of "yes" answers on a 12-question checklist (CDC, 2017). A

score of four or more indicated a risk for falling and need for further assessment of

modifiable risk factors (CDC, nd). A score of four or less and a "yes" answer to falling

in the past year indicated risk for falling (CDC, nd). Each item on the checklist was

associated with a fall risk factor. For every "yes" answer, a corresponding education statement regarding the impact of risk was provided on the self-rated FRQ (CDC, 2017).

The goal of this quality improvement project was to decrease fall rates and fall-related injuries through the administration of a self-fall risk assessment tool combined with CDC-guided education. The outcomes identified for the project included fall incidence and fall-related injuries. Sociodemographic information, number of fall-related injuries, number of falls, fall risk score and item checklist answers were analyzed. Sociodemographic information was analyzed with measures of central tendency including, mean, median, and mode. Due to the small sample size, a nonparametric test, the Wilcox Signed Rank test, was utilized to compare pre and post intervention means. The statistical software utilized was the Statistical Package for the Social Sciences (SPSS).

Approval Processes. Before implementation of this study, an institutional review board approval was obtained from the University of Missouri-St. Louis and the graduate school. An approval was also obtained from a doctoral committee consisting of two graduate faculty members and one recognized scholar outside of the university setting. Since the geriatric agency utilized does not have an institutional review board, a letter was provided from the agency granting permission to conduct study in the establishment. Once permission was granted, study participants were recruited using a recruitment flyer distributed by agency staff. The flyer included information regarding the details of the quality improvement project, statement of voluntary participation, and contact information of the principal investigator. In addition to this, a postcard was provided to each participant to indicate "YES, I am willing to participate" or "NO, I am not willing to

participate". If "YES" was selected, he or she was asked to provide a phone number for future contact. This postcard was collected by geriatric agency staff and returned to the student principal investigator. Each postcard was assigned a number to ensure anonymity.

Participation in this quality improvement project was completely voluntary. Potential benefits included a reduction in falls and fall-related injuries and personal identification of fall risk. Potential risks associated with this quality improvement project included participant time consumption, recollection of past falls or fall-related injuries, and breach of confidentiality. Participants were able to opt of this quality improvement project at any time without any negative implications.

Procedures. Recruitment was initiated through the distribution of an information sheet and response postcard by the geriatric agency staff represented by the care attendant or nurse. Interested participants marked "YES, I am willing to participate" on provided postcard. Provided postcards were marked with a number on top corner to help maintain anonymity. Student principal investigator called each of the interested participants based on provided number and scheduled a preliminary Zoom call. During this call, the primary investigator completed an introduction, informed potential participants of the quality improvement project including the purpose, risks and benefits and answered any questions. Informed consent was obtained at this time verbally.

Once verbal consent was obtained, the principal investigator scheduled a Zoom call with each participant with provided contact information. Zoom calls were conducted with either caregiver's, attendant's, or participant's personal smart phone, tablet or computer. To allow for technical assistance, the caregiver/family member/care attendant

was present for Zoom call with participant. The principal investigator assessed for self-reported data by asking, "Do you consider yourself at risk for falling?", "How many falls have you had in the past eight weeks?", "How many fall-related injuries have you had in the past eight weeks?", "Do you use an assistive device?". The answers were recorded on the data collection tool. The principal investigator then implemented the self-rated FRQ by reading each item to the participant and recording participant response. The principal investigator read items to participants to account for potential vision problems or decreased reading capabilities. Once assessment was complete, the principal investigator calculated score, recorded score on data collection tool, and informed participant of risk level. Ideally, this interaction would occur face-to-face in the home, however, due to the current state of the Coronavirus pandemic and potential participant risk, all interaction was conducted through Zoom. All data collected was inserted into data collection tool.

After completion of the self-rated FRQ and self-reported fall data, participant and caregiver/family member/care attendant received a fifteen-minute education session from the principal investigator. This education session was informative with open dialogue that allowed participant to ask questions regarding falls. In this fifteen-minute education session, specific education provided was obtained from the Stay Independent Brochure in the CDC STEADI toolkit and completed self-rated FRQ. The information obtained from the CDC STEADI toolkit was free to the public and did not require permission for utilization. Participants received their individualized calculated fall risk score and all CDC-guided education material within three days of Zoom call. This was provided by geriatric agency staff. For individuals that were screened as at risk, a copy of their personal self-rated FRQ was provided to primary care provider (PCP) with signed

participant permission, to allow for further assessment. This was provided by the

principal investigator. For all others, principal investigator recommended participant

sharing fall screening results with PCP.

Eight weeks after implementation of the self-rated FRQ, the principal investigator

followed up with each participant through a ten-minute phone call. At this time, student

principal investigator assessed subjective reported falls, subjective reported fall-related

injuries, subjective risk for falling, and use of assistive devices. A chart review was also

be performed at eight weeks post-intervention to record documented geriatric agency

reported falls and fall-related injuries. All data was inserted into data collection tool.

Results

Forty-four recruitment flyers and postcards were distributed to all clients by the

geriatric agency staff. Twenty postcards were returned from interested participants.

After assessing for participant eligibility with individual phone calls, only sixteen clients

were eligible for participation (*N*=16). The four ineligible participants were younger than

65 years old and one ineligible participant was wheelchair-bound. Of the four ineligible

participants, two received in-home services and two received consumer-directed services.

Zoom calls were conducted with each eligible member with the assistance of geriatric

agency staff.

Demographic Characteristics

Sixteen geriatric agency clients (N=16) participated in this quality improvement

project. Table 1 shows the descriptive statistics related to population. Of the sixteen

participants, the mean age was 71.6 (SD 6.648) and the most frequent age of participants

was 67. Ten participants were between the ages of 65-69, four participants were between

the ages of 70-74, and two participants were 85 years or older. Participant ages ranged

from 65 years old to 88 years old. Thirteen participants (81.3%) were women and three

participants (18.8%) were men. Fifteen (93.8%) of the sixteen participants identified as

African American and one (6.25%) participant identified as Caucasian. All participants

received consumer directed services from the geriatric agency. No participants in this

quality improvement project received in-home services.

Fall Incidence

Pre and post intervention fall incidence and fall related injuries can be seen in

Figure 1. Prior to implementation of the fall risk questionnaire and education, there were

ten reported falls in the participants at baseline.   These ten falls were reported by five

individuals. Three participants reported one fall (18.8%), one participant reported two

falls (6.3%), and one participant reported five falls (6.3%). Eleven participants reported

zero falls (68.8%). One fall reported injury was reported at baseline (6.3%). Eight

participants who experienced a fall prior to intervention (80%) were between 65-69, one

participant (10%) was between 70-74, and one participant (10%) was 85 years or older.

Eight weeks after implementation of the intervention, two falls were reported from two

different participants and one fall-related injury. Both reported falls occurred in

individuals between the ages of 65-69. There were zero agency-reported falls or fall-

reported injuries before or after quality improvement project implementation.

The frequency of falls was compared before and after implementation of fall risk

questionnaire and education. On average, fall incidence was higher before compared to

after the intervention. Due to the small sample size and uneven data distribution the

Wilcoxon Signed Rank Test, a nonparametric test, was utilized to compare mean ranks.

The results of a Wilcoxin Signed-Rank Test in which the intervention did not elicit a

statistically significant change in fall incidence (T=2.50, z=-1.725 , p=0.84).

Fall Risk

Figure 2 illustrates individuals self-rated risk for falling and utilization of assistive

device before and after implementation. When asked if participants considered

themselves at risk for falling prior to intervention, Figure 2 shows that 68.8% of

participants (n=11) identified themselves as being a fall risk. When asked about

utilization of an assistive device prior to intervention, 62.5% of participants (n=10) stated

that they utilize some type of assistive device for mobility. Eight weeks after

implementation of the fall risk questionnaire and education, 81.3% of participants (n=14)

identified themselves as being at risk for falling. Seventy-five percent of participants

(n=11) reported utilizing an assistive device for mobility.

Fall Risk Questionnaire

Figure 3 illustrates responses from the Self-Rated Fall Risk Questionnaire.

Thirteen of the sixteen participants were identified as high risk for falling based on the

Self-Rated Fall Risk Questionnaire. Seven individuals identified as high risk were

between the ages of 65-69, four individuals were between the ages of 70-74, and two

individuals were 85 years and older. The average fall risk score for all participants was

7.56 (SD=3.346).

The student principal investigator read each item on the Self-Rated Fall Risk

Questionnaire to each participant and recorded the results. The most common responses

(Figure 3) were Question 6: Using hands to push from chair (87.5%), Question 1: Fall in

the past year (68.8%), Question 3: Feeling unsteady with walking (68.8%), Question 2:

Advised to use assistive device (62.5%), Question 8: Rush to the toilet (62.5%), Question

9: Lost feeling in feet (56.3%), Question 4: Use furniture to steady (56.3%), Question 10:

Taking medication that makes light headed or more tired than usual (43.8%), Question

12: Feeling sad or depressed (37.5%), Question 7: Trouble stepping onto curb (31.3%),

Take medicines to help sleep or improve mood, and Question 5: Worried about falling

(25%).

Discussion

After the implementation of the Self-Rated Fall Risk Questionnaire and CDC-

guided education, there was a reduction in the frequency of falls and fall-related injuries

in the participants. The objective of the quality improvement project was to have a

decrease of 15% incidence in both categories after intervention. There was a reduction of

85% from falls pre-intervention to post-intervention and a 0% reduction in fall related

injuries. Although the number of falls was reduced drastically, the results were not

statistically significant most likely due to small population size. In addition to this, the

time frame for pre-intervention falls was during the peak of winter which is a high-risk

period for falls and could have skewed data. The number one risk factor identified by the

participants from the Self-Rated Fall Risk Questionnaire was the need to use hands to

push up from a chair when standing.

The number of individuals that identified themselves as at risk of falling increased

from pre-intervention to post-intervention. This identification is crucial in awareness of

risk factor precautions. Despite reporting a fall, some participants still did not consider

themselves at risk for falling. In addition to this, the number of assistive devices utilized

increased from pre-intervention to post-intervention.

This quality improvement project can be utilized in future practice. The assessment and related education can be implemented with routine annual screenings and after new falls for clients at the geriatric agency. It allows for identification of individuals that are at risk for falling and for specific risk factors to be identified on an individual and group basis. Based on the answers from the Self-Rated Fall Risk Questionnaire, geriatric agency staff may be able to provide extra safety measures to individuals and create agency-wide education that would benefit majority of clients. For instance, 87.5% of individuals reported using their hands to push up from the chair. This could be an opportunity to provide strength training exercises for the clients.

Despite the positive response after implementation, there are areas that could be improved for the future. The project had a very small sample size which interferes with the normalcy of the distribution of data and the application to other populations. Recruitment was based on geriatric agency staff providing to clients. If staff did not deliver to clients in a timely manner, this would have altered the number of participants in the project. Student principal investigator should be solely involved in the recruitment in the future. In addition, ideally, this project would have been performed face-to-face, however, due to the state of the pandemic, distant implementation was a priority. Regarding inclusion criteria, individuals who will be getting any type of surgery between implementation times should be excluded. The utilization of assistive devices increased because someone had surgery on a knee. As open-ended education was provided to participants, many shared stories of falling in the past and fears which demonstrates an importance of the need of a future qualitative study regarding falls in community dwelling elders.

Conclusion

Falls and fall-related injuries are a major public health concern for individuals that are 65 years and older. While falls are not considered a normal part aging, they are preventable. To reduce risk for falling, it is imperative to understand and know one's risk for falling. A simple fall risk assessment, such as the Self-Rated Fall Risk Questionnaire, can be the first step in reducing falls and fall-related injuries in community dwelling elders. These assessments can be implemented by non-medical personnel and can make a true impact for geriatric agencies.

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Appendix

Appendix A.

Self-Rated Fall Risk Questionnaire

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.

Figures and Tables

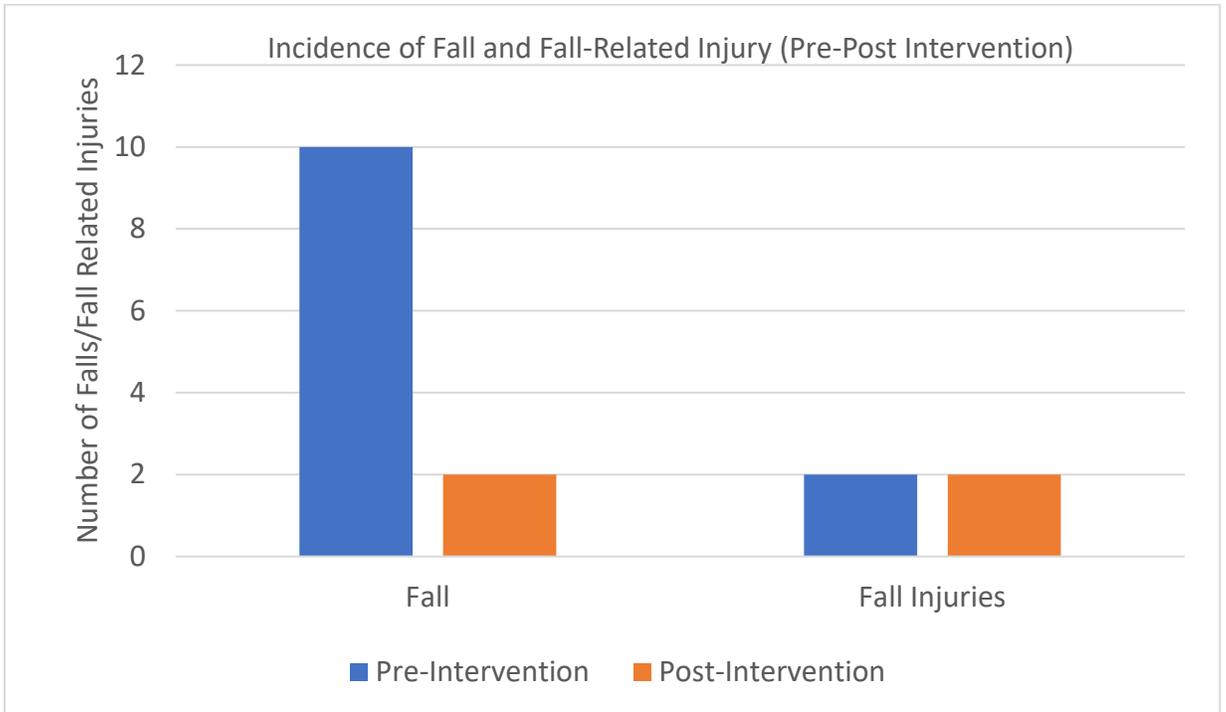**Table 1.**

Social Demographic Characteristics

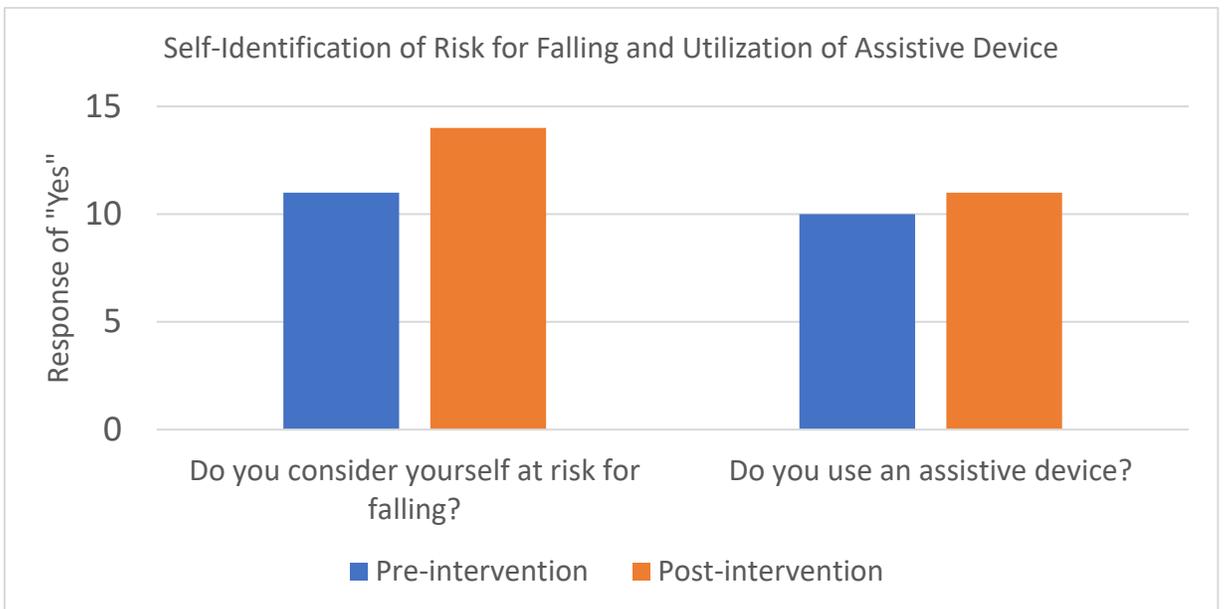| Category	Participants	Percentage (%)	Mean (Standard Deviation)	Range
Race				
Black	15	93.75%	-	-
White	1	6.25%	-	-
Age			71.06 (6.648)	66-88
65-69	10	62.5%	-	-
70-74	4	25%	-	-
75-79	0	-	-	-
80-84	0	-	-	-
85+	2	12.5%	-	-
Gender				
Women	13	81.5%	-	-
Men	3	18.75%	-	-

Figure 1.

Incidence of Fall and Fall Related Injury (Pre-Post Intervention)

Figure 2:

Self-Identification of Risk for Falling and Utilization of Assistive Device

Figure 3:

Self-Rated Fall Risk Questionnaire Responses