



Research article

Do older adults take action to reduce fall risk after attending a community-based fall risk screening?

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Abstract: We investigated whether older adults take action to reduce their fall risk after attending a community-based fall risk screening and receiving individual fall prevention recommendations. Older adults attending a free community-based fall risk screening received tailored advice from occupational and physical therapists based on their risk factors. Approximately three months after the screening, participants completed an interview survey via phone to understand actions taken due to the screening and recommendations. Sixteen participants completed the follow-up, and eleven took action or made behavioral changes. The most reported changes included being more cautious with functional mobility, walking speed, or stance, increased physical activity or exercise participation, and increased awareness of environmental hazards. Community-based fall risk screenings may motivate older adults to make behavioral changes to reduce fall risk; however, further research is needed to identify ways to improve the impact of community fall risk screenings and fall prevention recommendations.

Keywords: balance; evaluation; falls; geriatrics; occupational therapy; physical therapy; older adults; prevention; rehabilitation; screening

1. Introduction

Falls are an immediate health risk for adults aged 65 and above in terms of frequency and severity, with one in four experiencing falls annually, and unintentional falls ranking as the leading cause of nonfatal emergency department visits [1,2]. Falls can also lead to fatal injuries. From 2007 to 2016, the death rate from falls for older adults increased by 30%; if this rate continues, there will be seven deaths from falls every hour in the United States by 2030 [3]. Although falls are the leading cause of

injury-related deaths in those over the age of 65, evidence suggests that only half of the adults over the age of 65 with one or more reported falls within the past year discuss their fall history or fall prevention with a healthcare provider [2,4].

The Stopping Elderly Accidents, Deaths, and Injuries Initiative (STEADI) was initially developed for primary care settings to quickly screen a person's risk of falling and provide recommendations to reduce fall risk [5,6]. To use the STEADI toolkit, participants complete a validated self-assessment to identify fall risk factors. Practitioners then administer several standardized balance, gait, and strength tests and use this information within the STEADI algorithm to determine the participants' risk of falling. Practitioners can offer resources or make recommendations to reduce fall risk as appropriate [7]. The goal of administering this standardized screening and providing resources and education is that participants will be more aware of their fall risk and change aspects of their environment or behavior based on the practitioner's recommendations for community programs or appropriate referrals (e.g., occupational or physical therapy) to reduce fall risk and promote healthy living [8].

The STEADI screening demonstrates good validity and predicts fall occurrence over time [9]. However, there is little evidence of the extent to which the STEADI screenings and recommendations result in lifestyle changes and actions to decrease fall risk or promote participation in community-based fall prevention programs. At the time of this study, a limited number of studies have examined community-based fall prevention screenings and followed up with participants to inquire about their experiences and whether the screening resulted in any lifestyle changes. Ness and colleagues [10] followed up with screening participants one month post-screening and found that 72% of participants self-reported a behavior change. These authors also found that those identified as high risk during the screening were more likely to report follow-through on suggestions made. Karlsson et al. [11] followed up with fall risk screening participants at one and five months and found that 64.9% made one change by five months, the most common being exercise. Vincenzo et al. [12] interview-based study found that 79% accurately recalled their fall risk after six months. Just over half of the participants reported following up with one or more recommendations, and of these, participants could recall only exercise and home safety recommendations out of seven possible strategies. Finally, Elliot et al. [13] found similar results in a pilot study of an interdisciplinary community-based fall risk screening, where 72% of participants who anticipated making a behavioral change reported doing so at a follow-up. While these studies demonstrate initial evidence for fall risk screening outcomes, most of the education and recommendations made during the community-based events appear to be generalized for all participants rather than individualized. A pilot study did provide more individualized and interdisciplinary recommendations to participants at a community fall screening event; however, the researchers did not follow up to see if changes were made due to the screening [14]. Additionally, different balance tests and screening tools were utilized across studies, limiting comparison. Therefore, further research is needed to assess the impact of standardized community-based fall risk screenings, such as the STEADI, with individualized fall prevention recommendations.

Fall risk screenings have been recommended as a universal and targeted screening approach across healthcare settings to increase awareness among older adults, provide skilled recommendations, and connect them to the appropriate resources [15]. The American Geriatrics Society and British Geriatrics Society clinical practice guidelines from 2010 suggest that all adults over the age of 65 should be screened annually for fall risk and balance impairment [16]. Once per year, Medicare covers an Annual Wellness Visit that follows screening schedules and protocols based on the recommendations of the United States Preventive Services Task Force [17]. The United States

Preventive Task Force recommends a brief fall risk assessment for all community-dwelling older adults, including obtaining fall frequency information and progressing to physical balance and ambulation assessments such as the Timed Up and Go screening test if there is a history of falls [18]. The National Council on Aging endorses fall risk screenings to connect older adults with evidence-based community programs to further reduce fall risk. Still, there is limited evidence on the rates of older adults completing these screenings and accessing recommended resources [19]. Following this endorsement, many organizations offer fall prevention screenings as part of Fall Prevention Awareness Week, observed during the week starting on the first day of fall each year in the United States. While geriatric stakeholders and policymakers globally recommend screening for falls, the efficacy of these screenings requires further investigation to examine the extent to which they change participants' behaviors or motivate the adoption of fall-preventing strategies and participation in community-based fall prevention programs.

We aim to determine whether older adults take any action to reduce their fall risk after attending a free community-based fall risk screening using standardized screening tools and receiving individualized fall prevention advice. We aim to provide preliminary data to design a more extensive study to improve the effectiveness of standardized community-based fall prevention screenings. Specifically, we investigate whether a community-based fall risk screening using the STEADI tools followed by tailored recommendations provided by licensed occupational and physical therapists will result in older adults taking any action to reduce their fall risk and, if so, what actions. We hypothesize that older adults at an increased risk for falls will make at least one recommended behavioral change and sign up for a free community-based fall prevention class when recommended by a licensed occupational or physical therapist after the free screening.

2. Materials and methods

2.1. Study design

This prospective observational study was performed from September 2022 to January 2023. Institutional Review Board Approval was granted by Touro University Nevada (TUNIRB000194). Older adults were recruited with flyers and announcements through the state fall prevention coalition and posted at community centers. Participants were recruited during fall risk screenings at a member-driven community life-long learning center for retired and semi-retired older adults and a community center for residents of a 55+ active aging community during Fall Prevention Awareness Week in 2022. Screenings were offered on specific dates during the week deemed as higher traffic by the site and for several-hour blocks to increase the availability of screenings to attendees. Both sites offer public transportation options and provide regular programming for older adults. Licensed occupational and physical therapists screened older adults using the CDC STEADI functional assessments with the assistance of occupational and physical therapy doctoral students. Participants completed the Stay Independent Brochure (SIB) fall risk questionnaire, 30-Second Chair Stand Test (30CST), 4-Stage Balance Test (4SBT), and the Timed Up and Go (TUG) Test from the STEADI toolkit. Occupational and physical therapy doctoral students assisting with the screenings completed a two-hour training on the STEADI, demonstrated competency, and were directly supervised during all screenings.

Following the screening, a licensed occupational or physical therapist reviewed the STEADI results and provided the participant with education on fall risk factors and individualized

recommendations such as community fall prevention programs (e.g., Stepping On, OTAGO, Tai Ji Quan: Moving For Better Balance, etc.), referral to a physician/healthcare provider to discuss specific concerns (e.g., optometrist to assess vision, pharmacist to discuss medications, primary care provider to discuss risk factors, etc.), balance exercises, increasing physical activity, and reducing fall risks, such as home modifications or wearing appropriate footwear, etc. At this time, participants were provided information about this study and consented. Written informed consent was obtained for all participants. Participants were told they would receive a phone call in approximately three months to ask questions about the fall prevention screening, including how to improve them in the future. Participants were not explicitly told that they would be asked about actions they had taken as a result of the screening to reduce participant response bias.

2.2. Participants

A total of 50 older adults in Southern Nevada, United States, were screened at both locations as part of Fall Prevention Awareness Week, and 30 consented to receive a phone call approximately three months after the screening. Inclusion criteria included adults over 55 attending the fall prevention screening. All consenting participants were contacted via phone, but only 16 responded and completed the follow-up phone call survey (self-reported biological sex: 4 Male and 12 Female). The 14 remaining participants were contacted at least three times, with three voicemail messages left at least one week apart. All follow-up phone calls were made by the same researcher who was not involved in the fall risk screening. The participants' ages ranged from 64 to 87 (Mean = 73.87; SD = 5.98). All participants lived independently in their own homes with no full-time caregivers and had not been hospitalized in the last six months. At the time of the fall risk screening, the participant means (standard deviation) for the SIB Falls Risk Questionnaire = 5.13 (3.54), TUG = 12 (3.74) seconds, and the 30CST = 11.13 (4.90) times coming to a full standing position, and 4SBT position = 2.94 (0.93). These descriptive statistics are included to provide a fall risk profile for the participants.

2.3. Fall prevention screening

2.3.1. Measures

Three outcome measures and a validated self-assessment were utilized to assess fall risk, balance, mobility, strength, and endurance, which included the SIB falls risk questionnaire, the TUG, 30CST, and 4SBT. These measures were selected based on their clinical utility and inclusion in the CDC STEADI toolkit as recommended standardized functional assessment tools [6–8]. Clinician recommendations to reduce fall risk were based on these measures.

The SIB falls risk questionnaire includes 12 statements related to fall risk that the older adult answers with a yes or no (e.g., “I have fallen in the past year; I am worried about falling; I have lost some feeling in my feet”). Points are added for each affirmative answer, and a score of four or more has been shown to indicate a possible fall risk [8]. The SIB was developed specifically for the CDC as a preliminary validation tool to self-assess fall risk [20]. It can also be used as an educational tool to raise awareness of fall risk and the significance of each item on the questionnaire. The SIB has been shown to have good concurrent validity, clinical acceptability, as well as excellent sensitivity and specificity in community-dwelling older adults [20].

The TUG evaluates dynamic balance and mobility in older adults. This timed performance measure asks the subject to stand from a standard armchair without using their upper body, walk 10 feet away at normal speed with an assistive device as needed, turn around, and sit back down. The TUG is correlated with increased fall risk when older adults take >12 seconds to complete the task [21]. This assessment tool is widely utilized and has been demonstrated to have good reliability and validity among older adults [21,22]. While TUG has been shown to predict falls, evidence suggests that the TUG be used in combination with other assessments to accurately predict community-dwelling older adults at increased risk of falls [23].

The 30CST measures leg power and endurance in community-residing older adults. The subject is asked to sit in a straight back chair without arms, rise to a full standing position, and return to sitting with their arms crossed in front of the chest. The score consists of the number of times the subject completes a sit-to-stand in 30 seconds. Normative data were collected on 7183 older adults, and a below-average score relative to normative values for age groups and sex on this test indicates an increased risk for falls (e.g., <14 for men and <12 for women ages 60–64, etc.) [7,8,24].

The 4SBT is a quick assessment of static balance. Subjects are asked to stand in four progressively challenging positions and hold them for 10 seconds without moving. If the subject can hold the position for 10 seconds without moving their feet or needing support, the next position is attempted. Once the subject cannot safely hold a position for the allotted time, the test is ended. An older adult who cannot maintain tandem standing (position 3 of 4 of the test) for at least 10 seconds is at an increased risk of falling [6–8].

2.4. Follow-up interview questions

Participants completed a phone interview survey approximately three months after the fall prevention screening with a researcher who did not participate in the fall screenings. Responses were recorded verbatim during the interview. Table 1 provides the follow-up interview questions.

Table 1. Follow-up interview questions.

| Number | Interview questions |
|--------|---|
| 1 | Have you participated in any previous fall prevention screenings? |
| 2 | Have you had any falls since the screening? |
| 3 | Have you made any changes based on the screening or therapist recommendations? If so, what changes have you made? |
| 4 | Have you signed up for any of the recommended community-based fall prevention classes? If so, which classes? |
| 5 | What was the most beneficial aspect of the screening? |
| 6 | What was the least beneficial aspect of the screening? |
| 7 | What recommendations do you have to improve the screening? |
| 8 | What, if any, information or resources would you like in future fall prevention screenings? |
| 9 | Is there anything else you would like to share about the screening or your experience that we have not asked about? |

2.5. Analysis

Interview survey responses were aggregated and totaled using frequency counts. Open-ended responses for questions were categorized by two independent researchers, reviewed by a third researcher for consistency, and totaled using frequency counts. Descriptive statistics are also reported for fall risk screening outcomes to provide a fall risk profile of the participant sample.

3. Results

A total of 16 participants out of the 30 who initially consented completed the follow-up interview survey. All but one of the participants were at an increased risk of falling according to the STEADI (e.g., an increased fall risk on one or more of the STEADI screenings). All participants were provided with recommendations to attend an appropriate community-based fall prevention program available locally (e.g., Stepping On, OTAGO, or Tai Ji Quan: Moving For Better Balance). All participants were provided with an interpretation of their screening results and tailored fall prevention recommendations by a licensed occupational or physical therapist specializing in geriatric care and fall prevention.

Fourteen participants (87.5%) had never participated in a community-based fall prevention screening, and two (12.5%) reported being screened by their physical therapist in the past. Thirteen participants reported no falls since the screening, one reported several near falls (Margaret; see Table 2), and two reported multiple falls (Betty and Evelyn; see Table 2).

When asked about any changes made in their daily lives based on the fall prevention screening or the recommendations made by the therapist, eleven participants (68.75%) reported specific changes and five (31.25%) reported not making any changes. See Table 2 for reported behavior changes or actions taken. Table 2 illustrates the changes or actions the participants reported, recognizing that they could report multiple actions, and provides basic demographic and fall risk information for comparison with participants who did not report taking any action. Pseudonyms are used to protect participant privacy.

The most common reported changes were being more careful or cautious with functional mobility, walking, speed, or stance ($n = 9$) and increasing participation in exercise or physical activity ($n = 7$). Following these changes were being more aware of the environment and surroundings that may cause a fall ($n = 5$) and modifying the home environment to increase safety ($n = 3$). Increasing the use of assistive devices for ambulation ($n = 2$), scheduling an appointment with a healthcare provider ($n = 2$), researching fall prevention ($n = 1$), and increasing water intake ($n = 1$) were also reported. None of the participants reported signing up for the recommended community-based fall prevention programs, despite all receiving a recommendation for at least one program and a flyer with specific information on upcoming programs being offered throughout the community in person and virtually.

Table 2. Reported behavior changes or actions taken based on the fall prevention screening and therapist recommendations.

| Participant (age; reported sex; fall risk) | Behavior change 1 | Behavior change 2 | Behavior change 3 | Behavior change 4 |
|---|---|---|--|---|
| Helen (87; Female; Increased fall risk in SIB, 4SBT, TUG) | More careful or cautious with functional mobility, walking speed, or stance | More aware of the environment and surroundings that may cause a fall | | |
| Dorothy (74; Female; Increased fall risk in SIB, TUG) | More careful or cautious with functional mobility, walking speed, or stance | Increased participation in exercise or physical activity | More aware of the environment and surroundings that may cause a fall | Scheduled an appointment with a healthcare provider |
| Betty (79; Female; Increased fall risk in SIB, TUG) | More careful or cautious with functional mobility, walking speed, or stance | Increased participation in exercise or physical activity | | |
| Margaret (72; Female; Increased fall risk in SIB, TUG) | More careful or cautious with functional mobility, walking speed, or stance | Increased participation in exercise or physical activity | | |
| Ruth (75; Female; Increased fall risk in 30CST) | More careful or cautious with functional mobility, walking speed, or stance | More aware of the environment and surroundings that may cause a fall | | |
| Walter (64; Male; Increased fall risk in SIB) | Increased participation in exercise or physical activity | Made modifications to the home environment to increase safety (e.g., added night lights in the hallway, removed rugs, etc.) | Increased use of assistive devices for ambulation | Scheduled an appointment with a healthcare provider |

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| Participant (age; reported sex; fall risk) | Behavior change 1 | Behavior change 2 | Behavior change 3 | Behavior change 4 |
|---|---|--|---|---|
| Alice (72; Female; Increased fall risk in SIB) | Made modifications to the home environment to increase safety (e.g., added night lights in the hallway, removed rugs, etc.) | Increased water intake | | |
| Albert (77; Male; Increased fall risk in SIB) | More careful or cautious with functional mobility, walking speed, or stance | Increased participation in exercise or physical activity | Increased research into fall prevention, such as exercises, nutrition, stretching, and modifications | |
| Michael (65; Male; Increased fall risk in SIB) | More careful or cautious with functional mobility, walking speed, or stance | More aware of the environment and surroundings that may cause a fall | | |
| Melissa (72; Female; Increased fall risk in TUG) | More careful or cautious with functional mobility, walking speed, or stance | Increased participation in exercise or physical activity | More aware of the environment and surroundings that may cause a fall | |
| Diane (79; Female; Increased fall risk in SIB, 4SBT, TUG) | More careful or cautious with functional mobility, walking speed, or stance | Increased participation in exercise or physical activity | Made modifications to the home environment to increase safety (e.g., added night lights in the hallway, removed rugs, etc.) | Increased use of assistive devices for ambulation |

Continued on next page

| Participant (age; reported sex; fall risk) | Behavior change 1 | Behavior change 2 | Behavior change 3 | Behavior change 4 |
|--|-------------------|-------------------|-------------------|-------------------|
| Wilma (87; Female; Increased fall risk in SIB, 4SBT, TUG, 30CST) | None | | | |
| Joan (73; Female; Increased fall risk in SIB, 4SBT, TUG) | None | | | |
| Anne (72; Female; Increased fall risk in SIB, 4SBT, TUG) | None | | | |
| Evelyn (71; Female; Increased fall risk in SIB, 4SBT, TUG) | None | | | |
| John (68; Male; No increased fall risk) | None | | | |

Note: SIB: Stay Independent Brochure Fall Risk Questionnaire; 4SBT: 4-Stage Balance Test; TUG: Timed Up and Go Test; 30CST: 30-Second Chair Stand Test.

When asked about the most beneficial aspect of the fall prevention screening, most of the participants ($n = 9$) reported an increased awareness of fall risk factors and ways to prevent falls. Two participants reported having a baseline of their balance and fall risk as most beneficial. Two participants reported that the opportunity to talk with a licensed occupational therapist was the most beneficial aspect. Two participants reported that recognizing their deficits and having recommendations on how to address them specifically was most beneficial. No participants reported anything when asked about the least beneficial aspect of the screening.

Participants also provided multiple recommendations to improve future fall prevention screenings. The most common response ($n = 3$) was to increase advertising efforts among older adults who rarely get out in the community. All three participants reported multiple acquaintances needing to participate in the screening but rarely leaving their house and suggested targeting older adults less active in the community. One participant recommended more community resources for physical activity and outpatient therapy. Last, two participants recommended making it a more comprehensive screening, including cognition, bloodwork, nutrition, etc.

4. Discussion

Older adults may take action to reduce their fall risk after attending community-based fall prevention screenings. The most reported changes were being more cautious with functional mobility, walking speed, or stance, increasing participation in exercise or physical activity, and becoming more aware of the environment and surroundings that may increase fall risk. However, further education and intervention beyond fall prevention screenings are needed to initiate significant lifestyle, environmental, or behavioral changes, including participation in community fall prevention programs. Only eleven of 16 participants reported making changes after the fall prevention screening and tailored recommendations, and no participants signed up for the recommended community fall prevention program despite all participants having an increased fall risk.

Participants in this study introduced fall risk reduction behaviors within a similar range of previous research. We found that 68.75% of participants took at least one action or made a behavioral change three months following the screening. Karlsson et al. [11] reported that 50% of participants adopted at least one recommendation at a one-month follow-up, increasing to 64.9% at five months. Vincenzo et al. [12] research showed that 57.1% of participants introduced a new behavior at six months. Ness et al. [10] found that 72% of participants made a behavior change after one month. A common theme among all studies is that increased physical activity or exercise was one of the most common behavior changes. However, Vincenzo et al. [12] were the only researchers to collect pre-test data on participants' physical activity levels. They highlighted that although initiating exercise and/or walking was the most cited change, they never explicitly recommended walking as a fall risk-reducing behavior [12]. We did not document the specific recommendations given to each participant beyond the community fall prevention programs, and it is possible that the changes reported were not directly recalled from the fall risk recommendations provided at the screening. However, a strength of this study was that participants were blinded to the fact that follow-up data collection would involve asking about any actions taken after attending the screening. Future research should document individual recommendations to examine recall and follow through for specific fall prevention recommendations.

The most common change reported by participants in this study was being more careful or cautious with functional mobility, walking speed, or stance. Whether this result is due to explicit clinician recommendations, participant perception upon completing a fall risk screening, or existing beliefs, the report of being careful or cautious is highly subjective, and there is no conclusive data indicating this is an effective strategy to reduce falls. Still, our participants are not alone in utilizing caution; a study on fear of falling in older adults reports "being careful" as the most common participant-cited strategy to prevent falls [25]. Being cautious is a sign of fall risk awareness, and there are multiple reasons that older adults may initiate a fall risk awareness process and start making behavioral changes [26]. While being cautious or more careful has not been shown to reduce fall risk in the literature, anecdotally, it demonstrates that participants had greater awareness of their fall risk after the screening and were taking additional precautions that they believed would reduce falls and were aligned with the therapist's recommendations. Therefore, community-based fall prevention programs may help initiate the fall risk awareness process for older adults at risk for falls, leading to behavioral changes. However, clinicians should be aware that fall risk screenings may increase fear of falling [27], which could lead to excessive or maladaptive avoidance behavior and activity restriction, leading to unnecessary deconditioning and further fall risk [28,29]. Fear of falling and activity

restriction should be addressed during and after the screening to mitigate excessive fear or avoidance behavior and negative downstream consequences.

Many participants also reported increased participation in physical activity or exercise after the screening. While we did not collect data on previous activity levels, evidence suggests low physical activity guideline adherence among older adults, indicating that most older adults would benefit from increased physical activity [30]. As such, all participants were provided with the recommendation to increase safe and appropriate physical activity, emphasizing lower body strength and balance, and seven out of sixteen reported increased participation after three months. An updated systematic review reaffirms previous findings that exercise can help prevent falls among older adults, finding high-certainty evidence that well-designed exercise programs can reduce the rate of falls among community-dwelling older adults by 25% [31]. Given the importance of well-designed exercise programs for fall reduction, we recommend specific physical activity recommendations and instructions based on current evidence rather than the generalized recommendations in this study to increase adherence. Moreover, multimedia approaches may have motivated more participants to increase physical activity [32].

While all but one participant demonstrated an increased fall risk based on one or more of the STEADI screenings, five participants did not report any changes or actions taken after attending the screening and receiving tailored advice. No patterns were evident among those who did or did not take action or report behavior changes after attending the screening, likely due to the small sample size and limited demographic information. Some participants may already be aware of fall prevention strategies, or they may not have been open to considering changes in their daily routines or behaviors. However, given that they chose to attend a fall risk screening, they demonstrated some interest in learning more about their risk and how to further mitigate it. Future research should consider participants' readiness for change and explore psychosocial factors, including perspectives from those who did not take any action to reduce fall risk despite being at an increased risk.

Participants also provided suggestions for improving fall risk screenings. Participants suggested increasing advertising efforts and recruitment among older adults who may be homebound or rarely attend community events. Community-based fall prevention screenings are primarily offered at senior centers and locations already frequented by active older adults engaged in their communities. Increased familiarity and utilization of virtual platforms for community health services expand opportunities for virtual fall prevention screenings to populations that have previously been unable to attend in person. More research is needed targeting fall prevention for older adults with limited community engagement and at risk for isolation and falls in their homes. While it is possible that accessibility issues, such as transportation access, travel time, inconvenient class times, and so on, may have been a barrier to attending the recommended community-based fall prevention programs, the classes were held in community settings frequented by older adults and those that provided additional aging services with public transportation options. Additionally, virtual options for community fall prevention programs were offered; still, no participants reported signing up for in-person or virtual programs. Flyers with detailed information were provided, and each participant was recommended to attend one of the programs, Stepping On, OTAGO, or Tai Ji Quan: Moving For Better Balance, based on their fall risk and current activity levels. Further investigation is necessary to understand why participants were not interested in the community programs and what barriers exist to participation.

Another participant reported that more resources and opportunities for safe physical activity and outpatient therapy would be helpful. Identifying vital resources within the local area for older adults

to engage in health-promoting occupations is essential to improve fall prevention screenings. Two participants recommended additional health screenings, such as cognition, bloodwork, and nutrition, as part of the fall risk screening. Working with fall prevention state coalitions and collaborating with multiple healthcare disciplines when organizing fall prevention screenings can increase valuable opportunities for older adults to access education about their current health status. Offering a variety of screenings and education on preventing falls from a multifactorial perspective can increase the impact of the screening for older adults. A Cochrane review and recent systematic review and meta-analysis support the efficacy of multifactorial fall prevention interventions in the community setting, highlighting the need for interdisciplinary evaluations and interventions [33,34]. Furthermore, global guidelines for fall prevention among older adults recommend comprehensive assessments and multidomain interventions tailored to individual risk factors [35]. A formal method for following up with screening participants is also recommended as part of each fall risk screening process, and clinicians should consider coordinating with primary care providers. Sustaining behavior change may require multicomponent strategies, such as extended care, skills training, social support, treatment tailoring, and self-monitoring [36]. Increased contact and follow-up with the participants to inquire about recommendations and problem-solve solutions to any barriers may be the most impactful way to ensure appropriate behavior change following the tailored fall prevention recommendations. Clinicians should identify ways to incorporate evidence-based strategies for behavior change within community-based fall risk screenings and the provision of tailored fall prevention recommendations.

4.1. Limitations and future research

While the relatively small sample size and minimal demographic information collected limit the generalizability of the findings, the results offer a preliminary understanding of the potential effect of community-based fall prevention screenings using the STEADI toolkit on behavior change and participant actions and support larger studies. Furthermore, a strength of this study is that the participants did not know they would be asked about behavior changes or actions taken after the screening, reducing participant response bias.

The occupational and physical therapists had limited time to provide recommendations (10–15 minutes) as there were no scheduled appointment times. This limitation may have resulted in rushed recommendations and inadequate time for the older adults to process the information and ask all their questions; however, it is consistent with the time available for screening. Another limitation is that 14 out of the 30 participants who consented to a follow-up interview survey could not be contacted. Although we utilized multiple attempts and left voicemail messages, this poses a limitation in the form of non-responder bias, and we did not have adequate demographic information from the non-responders to analyze differences between responders and non-responders.

Participants who attended the screening and participated in the study regularly attend programming at their respective sites and appear to actively seek opportunities to participate in health-promoting behaviors such as fall prevention screenings. A limitation of the study is that it does not address potential psychosocial factors that preclude an older adult from participating in a fall risk screening, such as fear of stigma or losing independence if labeled a fall risk, social isolation, which limits participation in community screenings, or underestimation of personal risk. External stigma (being labeled by others) and internal stigmatization (labeling oneself) may lead to reduced participation, social isolation, and increased attentional resources devoted to fear and avoidance

behavior during mobility. Additionally, we utilized only participants from two community sites. Future studies should consider multi-site and multi-state data collection to increase generalizability and further understand implications for urban versus rural areas. Additional variables, such as psychosocial factors, current physical activity levels, comorbidities, and pain, should also be considered in future research as they may be associated with behavior change. Future research should also consider mixed-methods designs to include more in-depth qualitative data.

Based on the participants' comments, future research should also consider how to ensure these screenings reach higher-risk, homebound older adults and those who may not attend community events. Because we did not collect data on the participants' current lifestyle or home environment (e.g., how physically active they were or any significant home safety hazards), some participants may have already engaged in appropriate physical activity or made appropriate home modifications. Therefore, these participants may not have made behavior or environmental changes because they may not have needed to. Last, we utilized only one follow-up approximately three months after the screening. Future research should consider the impact of additional contact with the participants (e.g., a phone call to check on the participant, review recommendations, and answer further questions), behavioral change outcomes after longer timeframes, and including a control group for comparison.

5. Conclusions

The most common changes reported by older adults after attending a community-based fall risk screening were being more cautious with functional mobility, increasing exercise or physical activity, and improved awareness of environmental factors that may cause a fall. While free community-based fall prevention screenings may help older adults make behavioral changes to reduce their fall risk, further research with larger sample sizes and more robust designs is necessary to understand the impact on fall risk and prevention. Furthermore, there are multiple considerations to improve the impact of these screenings, as not all participants took action to reduce fall risk, and no participants signed up for the recommended community fall prevention programs. For example, practitioners providing these screenings should consider advertising methods that target older adults less active in the community, incorporating interdisciplinary and multifactorial screenings, providing community-specific resources and accessible, evidence-based recommendations, and increasing contact points for follow-up and adherence with the participants.

Author contributions

John V. Rider and Shannon Martin: conceptualization; John V. Rider, Shannon Martin and Erin Vieira: data collection; John V. Rider and Erin Vieira: data analysis; John V. Rider, Shannon Martin and Erin Vieira: writing—original draft preparation; John V. Rider and Shannon Martin: writing—review and editing. All authors have read and agreed to the published version of the manuscript.

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

Ethics approval of research and informed consent

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Conflict of interest

The authors declare no conflict of interest.

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