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Using the Memory Impairment Screen by Telephone to Determine Fall Risk in Community-Dwelling Older Adults

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To the Editor: Nearly one-third of community-dwelling older adults aged 65 and older fall each year, and about 10% of these falls result in a serious injury, rendering falls a common and potentially devastating health problem.[1] Cognitive assessments are currently a part of the multi-factorial fall risk assessment recommended by the American and British Geriatric Societies' Clinical Practice Guideline for Prevention of Falls in Older Persons;[2] however, there is a need for reliable, valid and time-efficient screening tools. The aim of this study was to determine whether a brief, telephone-administered screening for dementia, the Memory Impairment Screen by Telephone (MIS-T),[3] could be used to determine fall risk over one year in a large sample of community-dwelling older adults.

METHODS

Falls-Free PA was a nonrandomized statewide trial for primary prevention of falls among older adults in Pennsylvania.[4,5] The aim of the study was to assess the effectiveness of *Healthy Steps for Older Adults* (HSOA), a statewide falls prevention program offered in senior centers. Falls incidence was measured monthly for 1 year by telephone call using an interactive voice response (IVR) system. The primary outcomes included: 1) number of months in which participants reported a fall (fall-months) per 100 person-months of follow-up, and 2) number of fall-months per 100 person-months of follow-up adjusted for physical activity (active person-months).[6] The MIS-T is comprised of four-items with semantic cues

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to assess episodic memory performance; a cut-point of 5 or less was used to classify those with potential memory impairment.[3,7]

RESULTS

Of the 1834 individuals enrolled in the study, 1777 completed one or more months of telephone follow-up(median = 10).The mean age of participants was 75.6 years (± 8.5), and 22% of participants (n = 391) at baseline had a MIS-T cut score of 5 or less, with only 15 participants (<1%) unable to complete the screening. Participants with memory impairment were older, more likely to be male, non-white, less educated, and more likely to report poorer balance than those without memory impairment.

Thirty-five percent (614) of all participants reported a fall, of whom 37.9% reported falls in more than one month (median = 2; range 2 to 9). Thirty-nine percent of those with memory impairment (151) and 33% (463) without memory impairment reported a fall. Fall rates per 100 person-months were 8.5for those with memory impairment, compared to 6.2 for those without memory impairment. Participants with memory impairment had 11.9 falls per 100 active person-months compared to 8.3 among those without memory impairment. After adjustment for multiple risk factors related to memory impairment and falls, participants with memory impairment had between a 24 to 29% increased risk of falling compared to those without memory impairment (Table 1). Other significant covariates included race, taking three or more medications, and self-reported balance deficits.

DISCUSSION

This is one of the first longitudinal studies to examine whether the MIS-T can be used to assess fall risk in community-dwelling older adults. Those with memory impairment were more likely to experience a fall and have other fall risk factors. While there is a lack of consensus regarding the association between deficits in memory performance and prospective risk of falls, studies have found that deficits in other cognitive domains, such as executive function, processing speed, and visuospatial skills, may be better predictors of fall risk.[8,9] These cognitive deficits often co-occur with impaired episodic memory.[10]

Current guidelines for preventing falls in community-dwelling older adults suggest that those who screen positive for falls or fall risk should receive a cognitive assessment.[2] A brief telephone screening may provide greater opportunities for identifying those at risk for falls and those who may benefit from a full cognitive assessment. Researchers and practitioners may want to consider using telephone-administered screenings for population-based studies and studies with limited time for screening.

Strengths of this study included monthly follow-up for nearly one year, assessment of fall risk factors, and accounting for differences in exposure to fall risks or FARE (FAlls Risk by Exposure) by adjusting for level of physical activity.[6] Study limitations include weaknesses of telephone-administered cognitive screenings,[3] a need for identifying an optimal cut score for memory impairment, and possible misreporting of falls; however, follow-up calls with people reporting falls were made to minimize potentially biased reporting.

CONCLUSION

Screening positive for memory impairment via the MIS-T was associated with increased fall risk. Future studies aimed at reducing falls in community-based samples should consider the MIS-T or similar instruments to assess potential cognitive impairment in older adults at risk for falls.

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Table 1

Number of Falls Per 100 Person-Months and Active Person-Months of Follow-Up (n = 1777)

	Person-Months of Follow-Up	Active Person-Months of Follow-Up
Variables	**Incidence Rate Ratio (95% Confidence Interval)**	
Age	1.001 (0.99, 1.01)	1.001 (0.99, 1.01)
Gender		
Male	1.00	1.00
Female	0.85 (0.73, 0.99)*	0.86 (0.74, 1.001)
Race		
White	1.00	1.00
Non-White	1.25 (1.04, 1.50)*	1.35 (1.13, 1.62)†
Education		
<High School	1.00	1.00
High School Graduate	0.83 (0.69, 1.001)	0.82 (0.68, 0.99)
Some College	0.99 (0.81, 1.21)	0.97 (0.79, 1.19)
College Graduate	0.92 (0.74, 1.15)	0.90 (0.72, 1.13)
Self-Reported Balance		
Excellent to Good	1.00	1.00
Fair to Poor	1.96 (1.72, 2.23) ‡	2.15 (1.89, 2.44)‡
Number of Medications		
0	1.00	1.00
1	0.82 (0.62, 1.10)	0.80 (0.60, 1.06)
2	0.94 (0.73, 1.22)	0.95 (0.74, 1.24)
≥ 3	1.20 (0.98, 1.46)†	1.26 (1.03, 1.55)‡
MIS-T Score		
Not Impaired (Score ≥ 6)	1.00	1.00
Memory Impaired (Score ≤ 5 or Missing)	1.24 (1.07, 1.44)†	1.29 (1.11, 1.49)‡

Note: MIS-T = Memory Impairment Screen by Telephone; Missing represents those unable to complete the MIS-T during the baseline telephone call (n = 15).

P <*.05,

† <.01,

‡ <.001