
بسم الله
الرحمن الرحیم

Impact of fear of falling and fall history on disability incidence among older adults: Prospective cohort study

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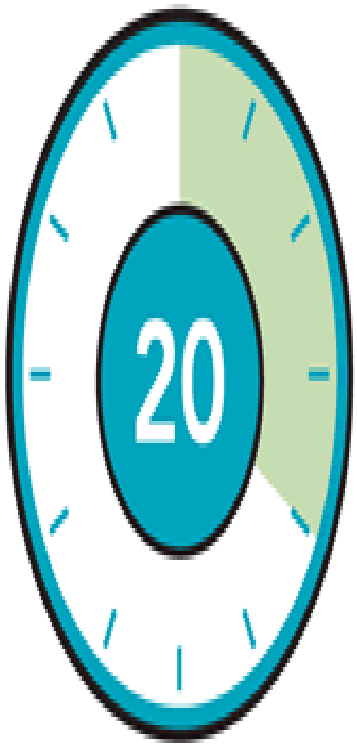
Professor: Dr. Raeisi
Presentation by: Dr. Fatemeh Sadat Mirzadeh
Geriatric medicin resident


age 65+
age 72+
age 80+
1 out of 3 people falls each year
fall every two years
fall every year



Every 20 minutes

an older adult dies from a fall in the United States. Many more are injured.

Take a stand to prevent falls

STEADI Stopping Elderly Accidents, Deaths & Injuries

CDC

OLDER ADULT FALLS
Startling Statistics

1 second

An older adult falls every second of every day.

1 in 4

One in four older adults reported a fall in 2014.

#1 cause

Falls are the #1 cause of hip fractures.

STEADI Stopping Elderly Accidents, Deaths & Injuries

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CDC

Introduction

- Fear of falling (FOF) is a major health problem for older adults, present not just in fallers, but also nonfallers.

- Fear of falling (FOF) is defined as " a lasting concern about falling that leads to an individual avoiding activities that he/she remains capable of performing."

- The prevalence of FOF is estimated to be ٢٠% to ٦٠% among community -dwelling older adults. Fear of falling is prevalent among older adults, both those with and without fall history.

- Excessive FOF in older adults frequently leads to adverse health outcomes such as:
  - ✓activity restriction
  - ✓fall incidents
  - ✓decreased quality of life

❖ The characteristics of FOF are differ according to the presence of recent fall history:

١. Fallers' FOF is the result of an actual fall
٢. nonfaller's FOF can be classified as a primary fear

❖ Bower et al reported that FOF was a
- ✓ significant predictor of functional recovery after hip fracture in those who were high functioning prior to fracture (irrational fear), whereas:
- ✓ it was not predictive of recovery in those with low prior function (rational fear).

❖ The aim of this study was to examine the impact of FOF and fall history on disability incidence among community-dwelling older.

METHODS

١. **Participants:**

- ✓ prospective cohort study
- ✓ enrolled community-dwelling older Adults were age ٦٥ years or older from August ٢٠١١ to February ٢٠١٢.
- ✓ ٥١٠٤ (٣٥,٧%) of whom participated in baseline assessment, including a face - to -face interview and measures of physical and cognitive functions.
- ✓ Included participants who completed baseline assessments and follow-up assessments of disability by the national long - term care insurance (LTCI) system.
- ✓ excluded criteria:
  ١. having a disability based on the LTCI system at baseline.
  ٢. a history of Parkinson disease, stroke, depression, or Alzheimer disease.
  ٣. a mini -mental state examination score below ١٩.
  ٤. death or moving to another city during the follow-up period.
- ✓ After exclusions, data from ٤٣٢٩ individuals were available for analysis.

٢. Disability incidence

- Participants were followed up monthly for approximately ٤ years (range ٤٩-٥٥ mo).
- The process for certification of personal support or care in the LTCI system is as follows:

  ١) An elderly person or caregiver contacts the municipal government to request official certification of the care needs of the applicant;

  ٢) A trained local government official visits individuals' homes to evaluate support or need for nursing care based on current physical and mental status;

  ٣) After completion of the assessment, the results are inputted into a computer to calculate the standardized scores on physical and mental status:

  - ✓ Estimated time required for the care of ٩ categories: grooming, bathing, eating, toileting, transferring, assistance with instrumental ADL, behavioral problems, and rehabilitation and medical services.
  - ✓ A care-need level based on the total estimated time for care is assigned.

۲. Disability incidence

۴) the care needs certification board including physicians, nurses, and other experts of health and social services reviews the data;
۵) The applicant is assigned to the level of care required (certified support-level ranging from ۱ to ۲ or care-level ranging from ۱ to ۵).

- The eligibility of the individual receiving care via the LTCI system is reevaluated every ۶ months.
- In the present study, incident disability was defined as new certification for the LTCI service at any level.

٣. Fall history and FOF

- Fall history and FOF were assessed by face-to-face interviews.
- A fall was defined as “an unexpected event in which the person comes to rest on the ground, floor, or a lower level.”
- Fall history was measured by asking the following question: “Do you have any history of a fall within the past year?”
- In this study, “fallers” were defined as people who had at least one fall within the past year.
- Fear of falling was assessed by a closed-ended question with ٤ response choices about participants' general FOF. The question was phrased as follows:

  “Are you afraid of falling?” Respondents of
  “very much” or “somewhat” were classified as participants with FOF.
  “a little” or “not at all” were classified as without FOF.

Other covariates

١. Age, sex, number of medication use

٢. medical condition of chronic diseases including hypertension, diabetes mellitus, heart disease, and osteoarthritis of knee

٣. Gait speed measured in seconds using a stopwatch

٤. Global cognitive function measured by MMSE

٥. Depressive symptoms assessed by a ١٥-item geriatric depression scale.

Statistical

Baseline characteristics were compared between participants who developed disability and those who remained independent categorical variables including the prevalence of FOF.

Participants were divided into ۴ groups:
Fall (−) FOF (−), Fall (+) FOF (−), Fall (−) FOF (+), and Fall (+) FOF (+)

RESULTS

١. Characteristics of participants

TABLE 1 Baseline characteristics of participants

		Overall (n = 4329)	Independent (n = 3900)	Incident Disability (n = 429)	*P*
Age	(years)	71.8 ± 5.4	71.2 ± 4.9	77.7 ± 6.3	<.001
Sex	(female, %)	2230 (51.5)	1972 (50.6)	258 (60.1)	<.001
Medical condition	(yes, %)				
Hypertension		1955 (45.2)	1723 (44.2)	232 (54.1)	<.001
Diabetes mellitus		562 (13.0)	486 (12.5)	76 (17.7)	.002
Heart disease		687 (15.9)	591 (15.2)	96 (22.4)	<.001
Osteoarthritis of knee		594 (13.7)	517 (13.3)	77 (17.9)	.007
Medication	(number)	1.9 ± 2.0	1.8 ± 1.9	2.8 ± 2.5	<.001
Gait speed	(m/s)	1.28 ± 0.21	1.30 ± 0.20	1.09 ± 0.25	<.001
MMSE	(score)	26.4 ± 2.5	26.5 ± 2.5	25.3 ± 2.9	<.001
GDS	(score)	2.7 ± 2.5	2.6 ± 2.4	3.7 ± 2.8	<.001
Fear of falling	(yes, %)	1874 (43.3)	1617 (41.5)	257 (59.9)	<.001
Fall history	(yes, %)	609 (14.1)	511 (13.1)	98 (22.8)	<.001

RESULTS

٢. Associations between FOF and disability incidence:

- Fall history in the past year was present in ٦٠٩ participants (١٤,١%), and FOF was reported by ١٨٧٤ participants (٤٣,٣%) at baseline.
- Prevalence of FOF was significantly higher in fallers than nonfallers (٥٤.٢% vs ٤١,٥%, P < .٠٠١).
- The disability incident rate was significantly higher in Fall (+) FOF (–) group (n = ٣٢, ١١,٥%), Fall (–) FOF (+) group (n = ١٩١, ١٢,٤%), Fall (+) FOF (+) group (n = ٦٦, ٢٠,٠%) than Fall (–) FOF (–)group (n = ١٤٠, ٦,٤%).
- Fall (–) FOF (+) group and Fall (+) FOF (+) group showed a significantly higher risk of disability incidence than Fall (–) FOF (–) group even after adjusting for covariates (Fall (–) FOF (+).
- On the other hand, Fall (+) FOF (–) group was not significantly associated with disability incidence after adjusting for covariates in this study.

TABLE 2 Hazard ratios for disability incidence during 4 years according to fear of falling, fall history, and covariates

		HR	95% CI	*P*
Fall (−) FOF (−)		Reference		
Fall (+) FOF (−)		1.41	0.96-2.08	.079
Fall (−) FOF (+)		1.28	1.01-1.62	.040
Fall (+) FOF (+)		1.44	1.05-1.98	.024
Age	(y)	1.12	1.10-1.14	<.001
Sex	(female)	1.35	1.10-166	.005
Hypertension	(yes)	0.98	0.80-1.20	.828
Diabetes mellitus	(yes)	1.15	0.89-1.50	.284
Heart disease	(yes)	0.98	0.77-1.25	.882
Osteoarthritis of knee	(yes)	0.89	0.69-1.15	.366
Medication	(number)	1.08	1.03-1.13	.001
Gait speed	(m/s)	0.15	0.09-0.24	<.001
MMSE	(score)	0.94	0.91-0.98	.001
GDS	(score)	1.03	1.00-1.07	.066

DISCUSSION

✓This prospective cohort study revealed the presence of FOF in ۴۳,۳% of participants at baseline, and ۹,۹% were certified as disability during the follow-up period.

✓This study revealed that nonfallers with FOF were at significantly greater risk of disability incidence than those without, even after adjusting for covariates.

✓coexistence of FOF and fall history showed highest risk of disability incidence in this study.

✓Cumming et al reported that FOF was associated with changes in ADL score among older people without recent falls.

✓Therefore, the assessment of FOF, regardless of fall history, can be helpful for predicting future disability.

✓Survival analyses revealed that risk of disability incidence was significantly higher in nonfallers with FOF compared to those without.

DISCUSSION

✓Fear of falling could be a simple and useful predictor of disability incidence in community-dwelling older adults.

✓In addition, the results of cox regression analysis indicated that FOF was associated with disability incidence, independently from physical and cognitive function.

✓Previous studies showed that older adults with FOF tend to restrict and avoid activities due to loss of confidence in the ability to perform daily tasks safely.

✓Therefore, FOF is not just result of fall experience, but psychological factor that may interact with falls on disability incidence.

✓Assessment of FOF may be important to prevent disability regardless of fall history.

THANKS FOR ATTENTION