Understanding the Relationship Between Fear of Falling and Mobility in Older Adults

Wednesday, April 3rd 2019

Dr. Mohammad Auais

THIS WEBINAR IS BEING RECORDED. THE SLIDE DECK AND RECORDING WILL BE EMAILED AFTER THE WEBINAR.
UNDERSTANDING THE RELATIONSHIP BETWEEN FEAR OF FALLING AND MOBILITY IN OLDER ADULTS

Fall Prevention Community of Practice
Apr 03, 2019
OVERVIEW

Background

Research projects
+ FOF and mobility disability
+ FOF and Life-Space mobility
+ FOF and incidence disability

Interventions
POLL: DO YOU EVALUATE FOF IN YOUR CLINICAL SETTING?

- Yes
- No
- Actually, not sure
BACKGROUND ON FEAR OF FALLING
FEAR OF FALLING (FOF)

A lasting concern about falling that leads an individual to avoid activities that he/she remains capable of performing, and this fear contributes to the probability of further falls (Tinetti M, Powell L, 1993)
FACTS ABOUT FEAR OF FALLING (FOF)

- 25% to 85% of older adults report FoF
- 20% to 55% curtail their physical activities as a result of FoF
- Reported by a significant number of older adults who have never experienced a fall!
Priorities for research in multiple conditions in later life (multi-morbidity): findings from a James Lind Alliance Priority Setting Partnership

S G Parker, L Corner, K Laing, G Nestor, D Craig, J Collerton, J Frith, H C Roberts, A A Sayer, L M Allan, ... Show more

*Age and Ageing, afz014, https://doi.org/10.1093/ageing/afz014*

**Published:** 20 March 2019 **Article history** ▼
ADVERSE OUTCOMES IN OLDER ADULTS ASSOCIATED WITH FOF

- Decreased muscle strength and physical capacity
- Social isolation
- Falls
- Greater frailty
- Higher risk of disability in daily living activities
- Increased mortality

Delbaere K et al., 2006; Scheffer AC et al., 2008; Murphy et al., 2003; Auais M 2017
FOF COULD LEAD TO A VICIOUS CYCLE

- Disability and falls
- Fear of falling
- Poor balance and slower gait speed
- Self-imposed restriction on physical activities
FOF Terminology

- Ptophobia
- Fear of falling
- Post fall syndrome
- Falls efficacy
- Balance efficacy
FOF Terminology

- Ptophobia
- Fear of falling
- Post fall syndrome
- Balance efficacy
- Falls efficacy
<table>
<thead>
<tr>
<th>FEAR OF FALLING COMMON MEASURES</th>
<th>FALLS EFFICACY (BALANCE EFFICACY) MEASURES</th>
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<tbody>
<tr>
<td>Single-item question</td>
<td>Fall Efficacy Scale (FES)</td>
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<tr>
<td>Survey of Activities and Fear of Falling in the Elderly (SAFFE)</td>
<td>Modified FES (mFES)</td>
</tr>
<tr>
<td>The Concern about Falling Scale (CaF)</td>
<td>Activities-specific Balance Confidence (ABC) Scale</td>
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<tr>
<td>University of Illinois at Chicago Fear of Falling Measure (UIC FFM)</td>
<td>Confidence in maintaining Balance Scale (CON-Fbal)</td>
</tr>
<tr>
<td>Fall Efficacy Scale- International (FES-I)</td>
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</table>

Review of measures: Jorstad et. al., 2005
FALL EFFICACY SCALE- INTERNATIONAL (FES-I)-SHORT VERSION

1. Getting dressed or undressed
2. Taking a bath or shower
3. Getting in or out of a chair
4. Going up or down stairs
5. Reaching for something above your head or on the ground
6. Walking up or down a slope
7. Going out to a social event (e.g. religious service, family gathering or club meeting)

Answer options:
☐ 1. Not at all concerned
☐ 2. Somewhat concerned
☐ 3. Fairly concerned
☐ 4. Very concerned

https://sites.manchester.ac.uk/fes-i/
POLL: IN YOU CLINICAL PRACTICE, WHICH TOOLS DO YOU USE TO EVALUATE FOF?

▪ Single-item question
▪ Survey of Activities and Fear of Falling in the Elderly (SAFFE)
▪ The Concern about Falling Scale (CaF)
▪ Fall Efficacy Scale- International (FES-I)
▪ Fall Efficacy Scale (FES), or one of its modifications
▪ Activities-specific Balance Confidence (ABC) Scale
▪ Confidence in maintaining Balance Scale (CON-Fbal)
▪ Others
MY PREVIOUS RESEARCH ON FOF

1. FOF and mobility disability
2. FOF and life-space mobility
3. FOF and incidence of functional disability
THE INTERNATIONAL MOBILITY IN AGING STUDY (IMIAS)
IMIAS RESEARCH SITES

- 01 Kingston, Ontario
- 02 Saint-Hyacinthe, QC
- 03 Natal, Brazil
- 04 Manizales, Colombia
- 05 Tirana, Albania

IMIAS Timeline

- 2012 Baseline
- 2014 1st follow-up
- 2016 2nd follow-up
Cortisol and physical performance in older populations: Findings from IMIAS by Ana Carolina Patricio de Albuquerque
METHODS

▪ Using IMIAS 2012 and 2014 data
▪ FoF was evaluated using the Falls Efficacy Scale-International questionnaire (FES-I, range: 16-64)
▪ Participants with possible dementia and those missing FES-I were excluded
Fear of falling as a risk factor of mobility disability in older people at five diverse sites of the IMIAS study

Mohammad Auais\textsuperscript{a}, Beatriz E. Alvarado\textsuperscript{b}, Carmen-Lucia Curcio\textsuperscript{c}, Angeles Garcia\textsuperscript{d}, Alban Ylli\textsuperscript{e}, Nandini Deshpande\textsuperscript{a,\textasteriskcentered}
MAIN OBJECTIVE

To examine fear of falling as a risk factor for mobility disability among community-dwelling older adults
WHAT’S MOBILITY DISABILITY & WHY?

400 Meters

Flight of stairs

01 A pre-clinical stage of more than half of end-stage disabilities

02 Preventable and amenable to interventions

03 Understanding this relationship would provide a basis for screening those at risk and intervening to prevent transition to end-stage disability
PREVALENCE OF MOBILITY DISABILITY IN EACH FOF GROUP

* Significant Prevalence Ratio of mobility disability
“IT IS THE INABILITY TO ACCOMMODATE ENVIRONMENTAL DEMANDS ON MOBILITY THAT LEADS TO MOBILITY DISABILITY”

(PATLA A, SHUMWAY-COOK A, 1999)
Fear of falling and its association with life-space mobility of older adults: a cross-sectional analysis using data from five international sites

Mohammad Auais; Beatriz Alvarado; Ricardo Guerra; Carmen Curcio; Ellen E. Freeman; Alban Ylli; Jack Guralnik; Nandini Deshpande
MAIN OBJECTIVE

To examine the association of FOF with life-space mobility of community-dwelling older adults from five diverse sites.
LIFE-SPACE MOBILITY

- Life-space mobility is the spatial area a person moves through in daily life
- Reflective of the individual’s physical activity status
  (Uemura K et al., 2013)
- Restriction in life-space mobility is predictive of:
  - cognitive impairment,
  - disability, and
  - mortality
  (Boyle PA et al., 2010)

**Outcome:** Life-space mobility (score: 0-120)
Conceptual model showing life-space levels as a series of concentric areas radiating from the room where a person sleeps

Peel C et al. PHYS THER 2005
## RESULTS - REGRESSION ANALYSIS

<table>
<thead>
<tr>
<th>Site</th>
<th>Estimate (B coefficient)</th>
<th>95% CI</th>
</tr>
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<tbody>
<tr>
<td>Overall</td>
<td>-0.14</td>
<td>-0.24 to -0.03*</td>
</tr>
</tbody>
</table>

*Statistically significant
Adjusting for age, sex, socioeconomic, and health covariates
Study 3: Fear of falling and incidence of functional disability
Fear of Falling Predicts Incidence of Functional Disability 2 Years Later: A Perspective From an International Cohort Study

Mohammad Auais, PhD, Simon French, PhD, Beatriz Alvarado, MD, PhD, Catherine Pirkle, PhD, Emmanuelle Belanger, PhD, Jack Guralnik, MD
To study the extent to which FOF is associated with incident functional disability over a 2-year period in older adults using self-reported and performance-based measures.
FOF PREDICTS FUNCTIONAL DISABILITY 2 YEARS LATER

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<thead>
<tr>
<th></th>
<th>Mobility disability</th>
<th>Physical performance disability</th>
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<tr>
<td></td>
<td>Incidence risk ratio</td>
<td>95% CI</td>
</tr>
<tr>
<td>FOF (FES-I: 16-64)</td>
<td>1.05</td>
<td>1.03-1.07*</td>
</tr>
</tbody>
</table>

*Statistically significant

Adjusting for age, sex, socioeconomic, and health covariates
What mediates the longitudinal relationship between FOF and functional limitation? (Study 4??)
STUDY 4: MEDIATORS OF THE RELATIONSHIP BETWEEN FoF AND DISABILITY
EVIDENCE-BASED INTERVENTIONS
EVIDENCE-BASED INTERVENTIONS

COGNITIVE-BASED THERAPY

EXERCISE
EXERCISE FOR FOF

- **Type**
  - Tai Chi, Yoga
  - Gait, balance, coordination and functional tasks
  - Strength- and resistance-based interventions

- **Duration and frequency**
  - Most were delivered for ≤12 weeks (but some for > 26 wks)
  - Usually 1–3 times/week

EXERCISE INTERVENTIONS

▪ Associated with *a small to moderate reduction* in FOF in community-dwelling older adults immediately post-intervention

▪ The effect of exercise interventions did not vary by type, frequency or duration of exercise

▪ The effect beyond the end of the intervention is unclear

*Kumar et al., 2016*

Benefit was greater where group (vs. individual) exercises were used.
COGNITIVE BEHAVIORAL THERAPY (CBT)

- CBT has small effect in reducing fear of falling with retention up to 12 months

- CBT components
  - Cognitive restructuring
  - Promotion of physical activities and
  - Goal setting

*Liu et al, 2018*
https://academic.oup.com/ageing/article/47/4/520/4880390
COGNITIVE BEHAVIORAL THERAPY (CBT)

- Intervention period ranges from 4 to 20 weeks
- The number of face-to-face sessions ranges from 3-9
- Duration of sessions ranges from 20–120 min

Liu et al, 2018
https://academic.oup.com/ageing/article/47/4/520/4880390
Group-based CBT seems to be less effective than individual based CBT.
TAKE HOME MESSAGES

1. FOF is an important **modifiable** psychological factor

2. It is associated with risk of mobility limitations and reduction in life space of older adults at different contexts
TAKE HOME MESSAGES

3. FOF predicted an increase in incidence of functional disability over a 2-year period.

4. Evidence suggests that exercise and CBT interventions have a positive effect on reducing FOF.
ACKNOWLEDGMENT

I would like to thank IMIAS team and CIHR
Thank You!
Questions?

Type your questions into the chat box.

OR

Dial *7 on your telephone to unmute.
Dial *6 when you are finished speaking to re-mute.

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